Setting Up Your Power Mac G4

Includes setup and expansion information for
Power Mac G4 and Macintosh Server G4 computers

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CHAPTER 1

Setting Up

Congratulations on purchasing your new Power Mac G4 computer. This chapter contains instructions for setting up your computer and display.

Positioning the Computer and Display

You can pick up the computer by any of its handles. If your monitor is heavy, be sure to use correct lifting techniques when positioning it. Position the computer and display so that

- they are on sturdy, flat surfaces
- the power cable connectors don't press against a wall or other object
- nothing obstructs air flow in the rear of the display or computer
- the computer's CD or DVD drive tray has space to open in front

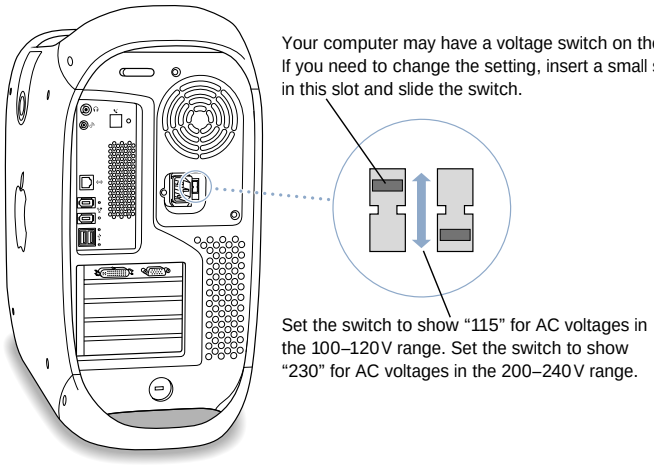
Important The only way to shut off power completely to your computer and display is to disconnect their power plugs from the power source. Make sure the power cords for your computer and display are within easy reach so you can quickly unplug them if necessary.

Plugging In the Computer

1 Set the voltage switch on the back of your computer to the correct voltage, if necessary.

- *If your computer doesn't have a voltage switch,* the correct voltage is set automatically and you can skip this step.
- *If your computer has a voltage switch,* make sure the voltage switch is set for the voltage system in your country.

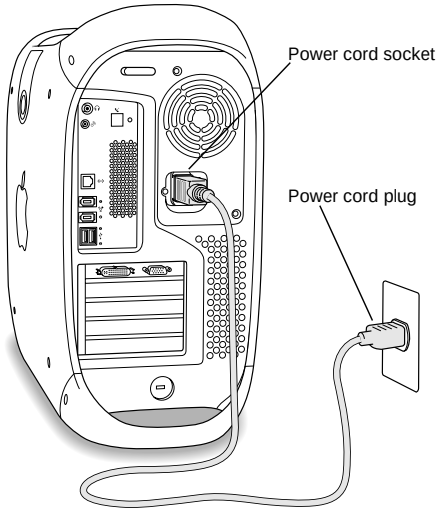
The voltage switch must be set correctly to avoid damaging your computer.


Your computer may have a voltage switch on the back.
If you need to change the setting, insert a small screwdriver in this slot and slide the switch.
Set the switch to show “115” for AC voltages in the 100–120 V range. Set the switch to show “230” for AC voltages in the 200–240 V range.

Country	Switch setting
Bermuda, Canada, Jamaica, Japan, Mexico, Philippines, Puerto Rico, Saudi Arabia, Taiwan, United States, Venezuela	115
Bahrain, Brazil, France, Indonesia, Italy, Lebanon, Peru, South Korea, Spain[1]	115 or 230
Argentina, Australia, Austria, Belgium, Bosnia and Herzegovina, Chile, China (People's Republic including Hong Kong), Croatia, Czech Republic, Denmark, Egypt, Finland, the Former Yugoslav Republic of Macedonia, Germany, Greece, Greenland, Hungary, Iceland, India, Iran, Ireland, Israel, Jordan, Kuwait, Liechtenstein, Luxembourg, Malta, Nepal, the Netherlands, New Zealand, Northern Ireland, Norway, Oman, Pakistan, Papua New Guinea, Paraguay, Poland, Portugal, Qatar, Romania, Russia and the Commonwealth of Independent States (CIS), Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Sweden, Switzerland, United Arab Emirates, United Kingdom, Yemen	230

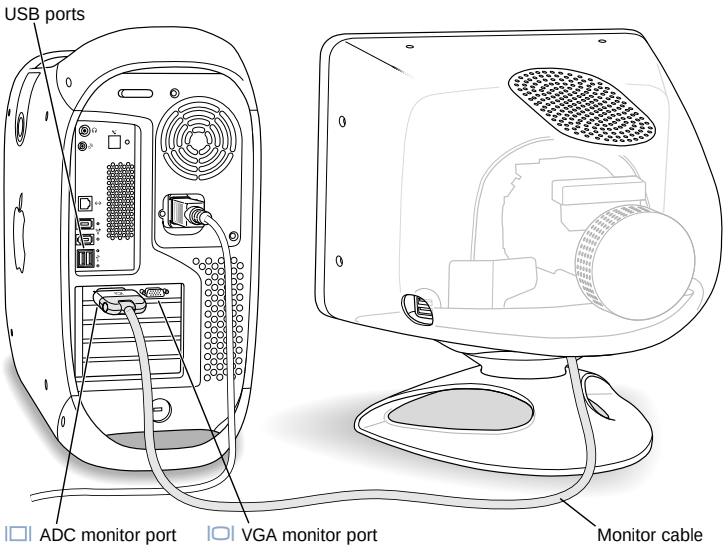
[1] These countries employ more than one type of power source voltage. Ask your local power provider which switch setting to use for your city or region.

2 Plug the power cord firmly and completely into the recessed power socket marked with the symbol ~ on the back of the computer and plug the other end into a grounded outlet or power strip.



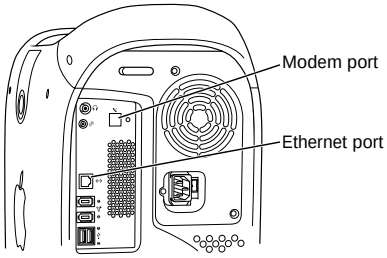
3 Connect your monitor cables according to the following illustration:

Important Depending on your monitor, you may have one or more cables to connect. Check the instructions that came with the monitor for further setup information.

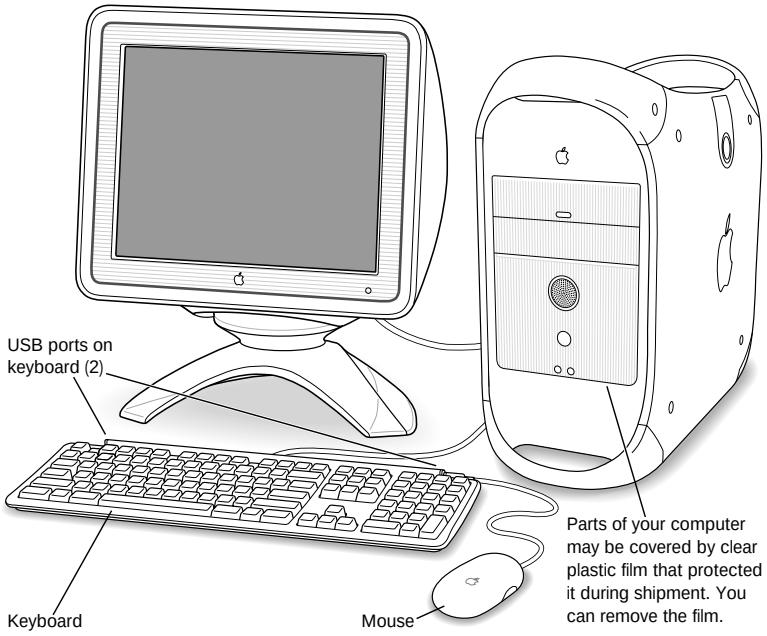


If your monitor cable has a two-row DB-15 connector, you can purchase a Macintosh-to-VGA adapter from an authorized Apple dealer and connect your monitor to the VGA port on the computer. If your monitor cable has a DVI connector, you can purchase a DVI-to-ADC adapter from an authorized Apple dealer or the Apple Store and connect your monitor to the ADC port on the computer.

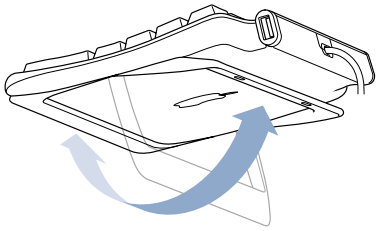
4 If required, connect your computer to your Ethernet network and connect your modem port to a phone line.



5 Connect the keyboard cable to one of the USB ports ( ) on the computer or on your monitor. Plug the mouse cable into a USB port on the keyboard.


USB ports on keyboard (2)
Keyboard
Mouse
Parts of your computer may be covered by clear plastic film that protected it during shipment. You can remove the film.

If you wish, raise the keyboard by lifting it and flipping the foot toward the back.



6 Turn on your computer by pressing the monitor's power button or the power button (⏻) on the front of the computer.

- If your monitor must be turned on separately, turn on your monitor by pressing its power button.

Need Help?

If you don't see anything on your screen or you think your computer did not start up properly, check these items:

- Is the computer plugged into a power source? If it is plugged into a power strip, is the power strip turned on?
- Are the keyboard and monitor cables connected correctly?
- Is the power button lit on the front panel of the computer and on the monitor? If not, the computer or monitor isn't receiving power.
- Is the monitor turned on? Are the brightness and contrast controls on the monitor adjusted correctly? If your monitor has brightness and contrast controls, adjust them.
- Restart your computer. Press the computer power button for approximately 5 seconds until the computer turns off. Press it again to turn the computer on.
- If you see a blinking question mark on the screen or hear a series of beeps when you turn on the computer, see Chapter 5, "Troubleshooting," on page 73.

When You're Not Using the Computer

When you're not using your computer, you can put your computer to sleep or turn it off. Sleep is a state in which your computer is on but uses very little power. You can put the computer to sleep whenever you want. If you're not going to use the computer for a few days, you may prefer to turn it off.

To put your computer to sleep:

- Press the power button on the front of the computer.

To turn off your computer:

- Choose Shut Down from the Special menu.

Important Do not turn off the computer by turning off the switch on a power strip or by pulling the computer's power plug (unless you can't turn off the computer any other way). Your files or system software could be damaged if your computer is not shut down properly.

Adjusting Your Monitor

Use the Monitors control panel to adjust the settings for your monitor. For information about troubleshooting your display, see "Problems With Your Display" on page 75. For information about maintaining your display, see "Maintaining Your Display" on page 86. Additional information about using your monitor is available in Mac Help.

To register a new Apple display with Apple, go to the Apple World Wide Web site:

www.apple.com/register

What's Next?

- For an overview of your computer's features, see Chapter 2, "Getting to Know Your Computer," on page 13.
- For more information about using your modem, connecting to a network, or using the computer's other hardware features, see Chapter 3, "Using Your Computer," on page 35.
- For information about installing additional drives, memory, or PCI cards or changing the computer's battery, see Chapter 4, "Working Inside Your Computer," on page 51.

CHAPTER 2

Getting to Know Your Computer

If you're eager to get started and want to try out a few things, this chapter is for you. It provides an overview of your computer's hardware and software features along with the unique Internet services available to Mac owners.

Your Power Mac G4 is a full-featured computer that includes the latest in computer technology such as FireWire, USB, and support for AirPort wireless Internet and networking. On top of this hardware runs the Mac OS operating system. Included with the Mac OS are powerful features that allow you to use the Internet to watch videos, research information, shop, and even update your software automatically.

With your Power Mac G4, you also get iMovie 2, an easy-to-use digital video-editing application that lets you use your computer to create desktop movies. Simply connect a digital video camera to the FireWire port on your computer, open iMovie 2, and you're ready to create your own movies.

On top of all this, Apple provides you with Internet services that give you storage space on the Internet, a personal Mac.com email address, tools to easily create your own Web site or iMovie theater, and more.

If You Are New to the Mac

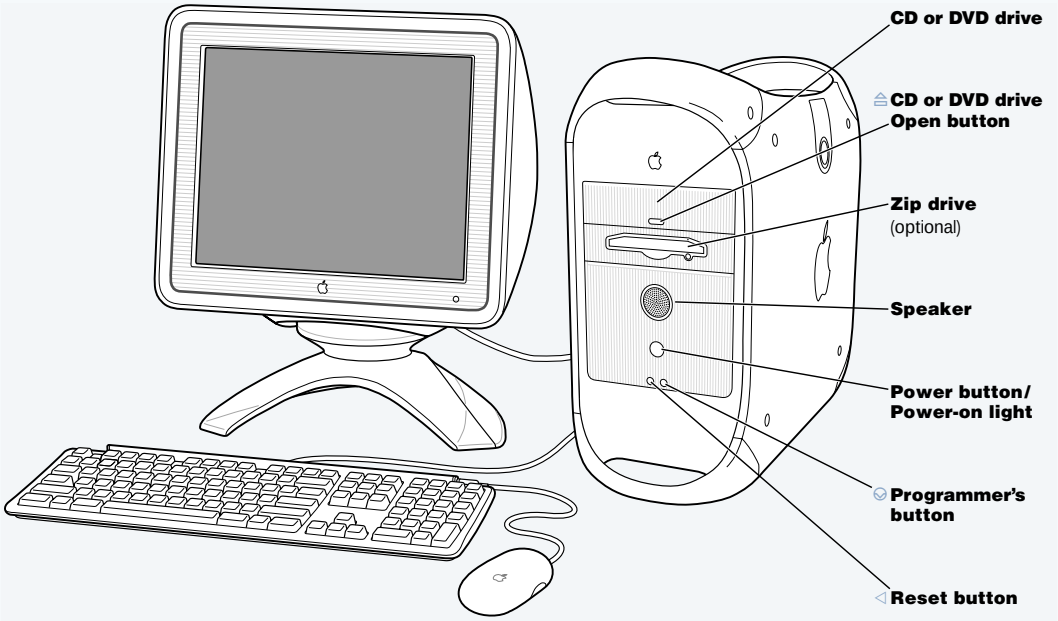
If this is your first Macintosh computer, start with the Mac tutorials to learn how to use the mouse to move items on the screen, go to a site on the World Wide Web, and more. To access the tutorials, choose Mac Tutorials from the Help menu.

In This Chapter

This chapter presents and briefly explains a selection of your computer's features.

Note: Because Apple frequently releases new versions and updates to its system software, applications, and Internet site, images shown in this manual may be slightly different from what you see on your screen.

Your Computer at a Glance



CD or DVD drive

Use CD discs to install software and access information. CD and DVD drives work with CD-ROM discs, Photo CDs, and standard audio discs. DVD drives also read most DVD discs and allow you to play and work with DVD movies and multimedia. Some types of drives, such as CD-RW or DVD-R drives, also enable you to record information on discs.

⏏ **CD or DVD drive Open button**

Opens the drive tray.

Zip drive (optional)

Store and back up information on removable Zip disks. If you purchased a Zip drive, it is installed here.

⏻ **Power button/Power-on light**

Press this button to turn on the computer or wake it from sleep. When the computer is on, press the power button to put the computer to sleep. Hold the power button down for more than 5 seconds to shut down the computer. A white light indicates that the computer is on. A pulsing light indicates the computer is in sleep.

With some Apple displays, you can also touch or press the monitor power button to turn the computer on or put it to sleep.

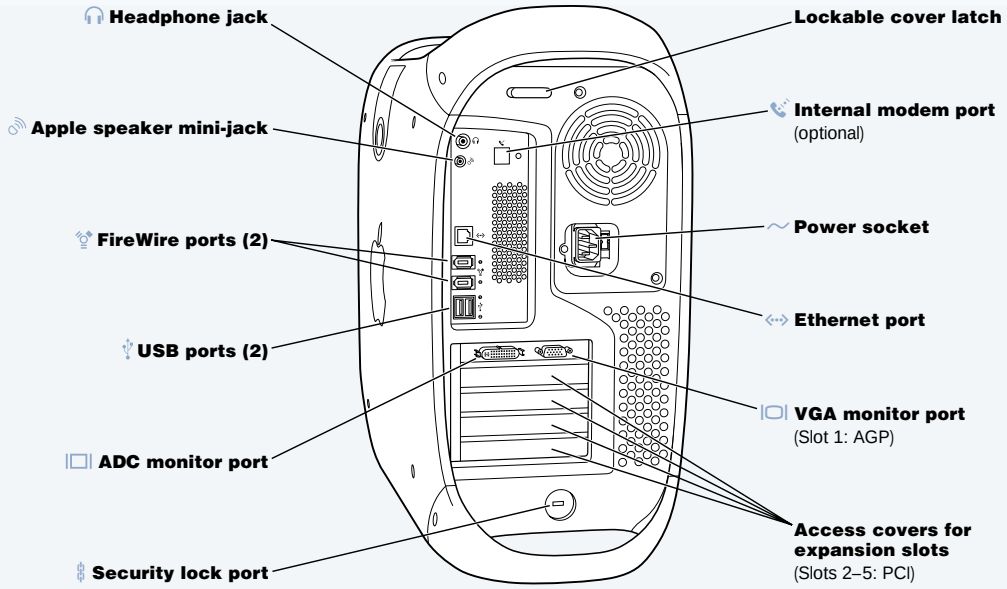
Programmer's button

This button interrupts the normal operation of the computer's software. You will use this button rarely or never, only when firmware updates are required for your system. Directions for using this button are included in the firmware update documentation.

◁ **Reset button**

This button forces the computer to restart. Use the reset button only when you cannot restart your computer with any of the recommended methods, such as choosing Restart from the Special menu. For more information about when to use the reset button, see Chapter 5, "Troubleshooting," on page 73.

Ports and Connectors—Expanding Your Computer's Capabilities



Headphone jack

Connect your Macintosh to headphones, externally powered (amplified) speakers, or other audio output equipment.

Apple speaker mini-jack

Connect your Macintosh to high-fidelity Apple speakers to play stereo music and sound for multimedia, games, audio CDs, and more. You can adjust speaker volume and balance individually using the Sound control panel. For more information about the kinds of speakers you can connect, go to the Apple World Wide Web site at www.apple.com/store

FireWire ports

Connect your Macintosh to FireWire devices, including digital video cameras, scanners, and hard disk drives. You can connect up to 63 devices. FireWire provides a high-speed method of data transfer between them all.

USB ports

Connect your Macintosh to USB devices, such as keyboards, mouse devices, printers, scanners, speakers, USB microphones, and USB hubs. Your monitor may also have USB ports for connecting USB devices.

Monitor ports

Connect your Macintosh to monitors that use the Apple Display Connector (ADC) or to standard monitors that have a video graphics array (VGA) connector.

Security lock port and lockable cover latch

You can attach a security lock to your Macintosh and to its back panel to secure the internal components. When the lockable cover latch is pulled out, you can insert a security cable or lock to prevent the computer cover from opening. See your computer products retailer for security lock devices that work with your computer.

Internal modem port

Connect a phone cord to the internal modem.

Power socket

Connects to the computer's power cord.

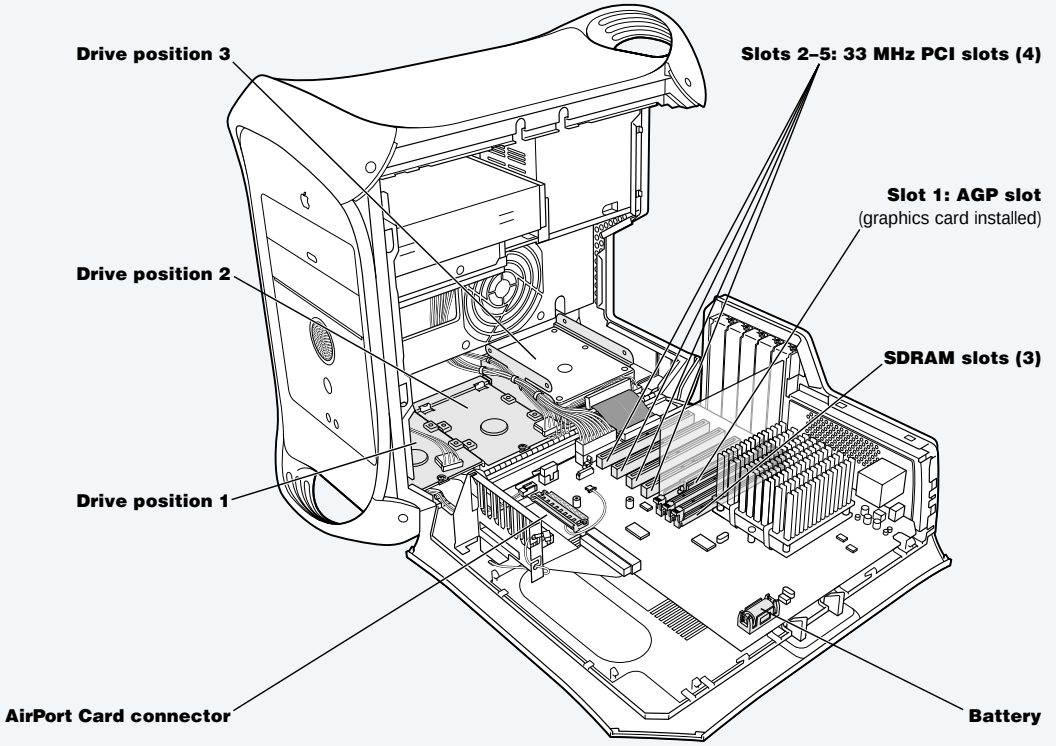
10/100/1000 twisted-pair Ethernet port

Connect your Macintosh to a high-speed Ethernet network so that you can access network resources, such as printers and servers, and share information with other computers over the network.

Access covers for expansion slots (4)

Your Macintosh supports up to four peripheral component interconnect (PCI) cards. The covered slots, labeled 2, 3, 4, and 5, provide additional expansion capability. In some configurations, an Ultra160 low voltage differential (LVD) SCSI card is installed in one of these slots.

Inside Your Power Mac—Your Computer's Internal Expansion Options



Hard disk drive carriers

You can install additional hard disk drives in these carriers inside your computer. If you have ATA hard disk drives, you can install up to two drives in a single U-shaped carrier. If your computer came with one or more SCSI hard disk drives, you can install up to three SCSI drives in the drive carriers.

AirPort Card connector

Connects an AirPort Card, which allows your computer to communicate with a wireless network.

PCI expansion slots

You can install PCI cards in these slots to expand your computer's capabilities. For example, you can install a SCSI PCI card and then connect and use SCSI devices such as scanners, hard disk drives, and Zip drives.

AGP graphics slot

Connects your AGP graphics card, which provides fast graphics processing power to your monitor. You can connect a monitor that has an Apple Display Connector or a standard VGA connector.

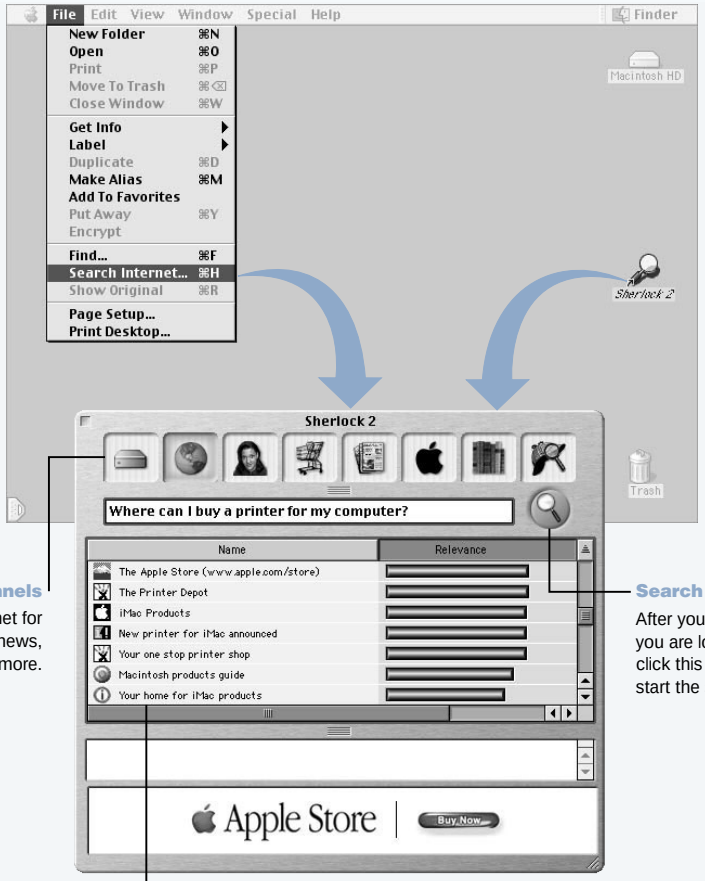
SDRAM slots

You can install additional memory in your computer by inserting up to 3 DRAM DIMMs in the memory slots. You can expand your computer's memory up to 1536 MB (1.5 GB).

Battery

Your computer uses a battery that you rarely replace. If you find that your computer is having trouble starting up, or that the system date and time are frequently incorrect, you may need to replace the battery. For more information, see "Replacing the Battery" on page 71.

Sherlock 2—Your Internet Search Detective



Sherlock channels
Search the Internet for people, shopping, news, Apple info, and more.

Search button
After you type what you are looking for, click this button to start the search.

Search sites
Search engines that Sherlock uses to search the Internet.

What You Can Do

Sherlock 2 is your search detective and personal shopper on the Internet. It provides an easy way to find people, news, and just about anything. Shop for books and music and search auction sites, find the best prices—even check product availability.

To Get Started

1. Connect to the Internet.
2. Choose Search Internet from the File menu or double-click the Sherlock icon on the desktop.
3. Select a Sherlock channel.
4. Type what you are looking for and click the Search button.

Tips and Tricks

Create your own customized Sherlock search channel

1. Choose New Channel from the Channels menu.
2. Select a name, channel type, and icon.
3. Download Sherlock plug-ins and drag them into the search site list. Or hold down the Option key and drag plug-ins from the other search lists to the icon of your new channel.

To Learn More

To learn more about what you can do with Sherlock, open Mac Help and search for "Sherlock." To download additional search plug-ins and find out how you can create your own Sherlock plug-in, go to the Sherlock Web site at www.apple.com/sherlock

iTools—Free Internet Services for Mac Users

Email

Get your own Mac.com email address. It's easy and free, and it works with your favorite email clients.

KidSafe

KidSafe makes the Internet a safer place for your kids. KidSafe gives them access to more than 75,000 educator-approved Web sites and blocks all the rest.

iDisk

With your very own 20 megabyte storage space on Apple's Internet server, iDisk is the easy way to share files over the Internet. Using iDisk, you can easily share photos and movies, as well as import them into your own Web site.

HomePage

Build your own personal Web site in three easy steps. Create a birth announcement, résumé, or photo album, or set up your own iMovie theater. Apple will even host your Web site on its Internet server, so it's always there for the world to see.

What You Can Do

iTools is a new class of Internet services from Apple created exclusively for Mac users. With iTools, you can email your friends, make the Internet safer for your children, and share photos and movies. You can even create your own Web site.

To Get Started

1. Connect to the Internet.
2. Go to www.apple.com
3. Click the iTools tab and then click the Free Sign Up button.

Tips and Tricks

Upload pictures to your iDisk to create custom iCards

You can send iCards with your own custom pictures. Save your images as GIF or JPEG files and then copy them to the Pictures folder on your iDisk. Your images will appear as picture choices when you create an iCard in the Create Your Own section.

Start with a HomePage template to create your own Web page in minutes

HomePage has Web page templates that you can modify with your own text and images. For example, teachers can use the HomePage education templates to post recent class news, homework assignments, and other information for parents. You can also use the HomePage photo album and iMovie templates to share your pictures and movies easily with your friends and family.

Create an alias of your iDisk for easy access

Instead of connecting to the Web manually to open your iDisk, you can select the icon of your iDisk and choose Make Alias from the File menu. Whenever you want to access your iDisk, double-click the alias and enter your password.

Use KidSafe in conjunction with the Multiple Users control panel

Use the Multiple Users control panel to set up your computer for your entire family to share. Then set up KidSafe for each of your children's accounts.

Apple.com—Your Starting Place on the World Wide Web

iReview

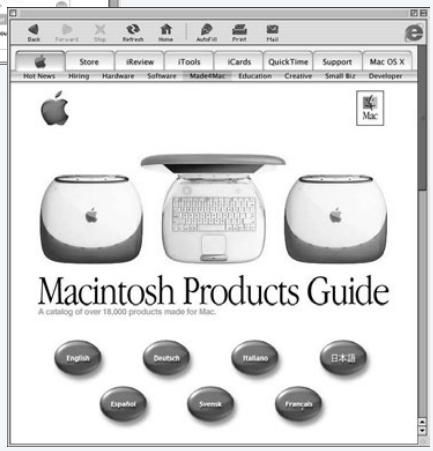
www.apple.com/ireview

Your personal guide to the Internet, with in-depth reviews and recommendations of sites ranging from news to travel, music, and sports.

iCards

www.apple.com/icards

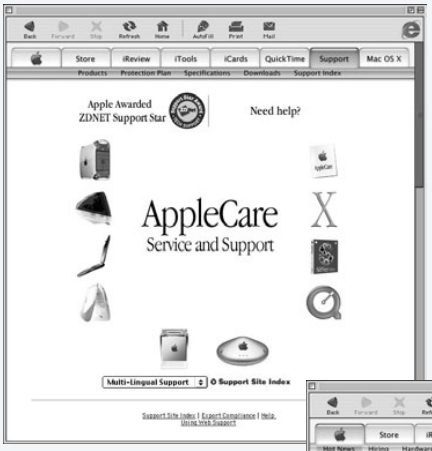
Use the Internet to send greeting cards to your friends and family.



Macintosh Products Guide

www.apple.com/guide

For great hardware and software products for your Mac, check this Web site or look for the Mac symbol.



Apple Support

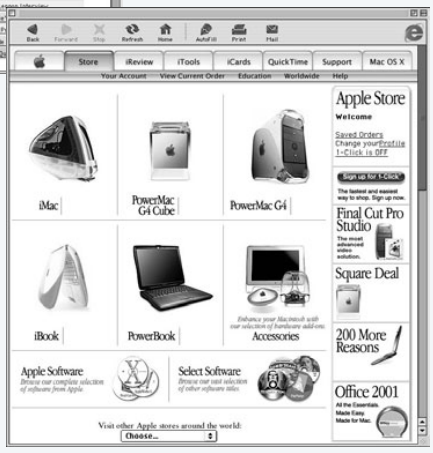
www.apple.com/support

Find the latest troubleshooting information, download software updates, find information on product protection plans, and more.

Apple Hot News

www.apple.com/hotnews

Want the latest Apple news straight from the source? Check out Apple Hot News. You can find information on software updates for your Mac and third-party software, QuickTime hot picks, and information on the next big Apple event.

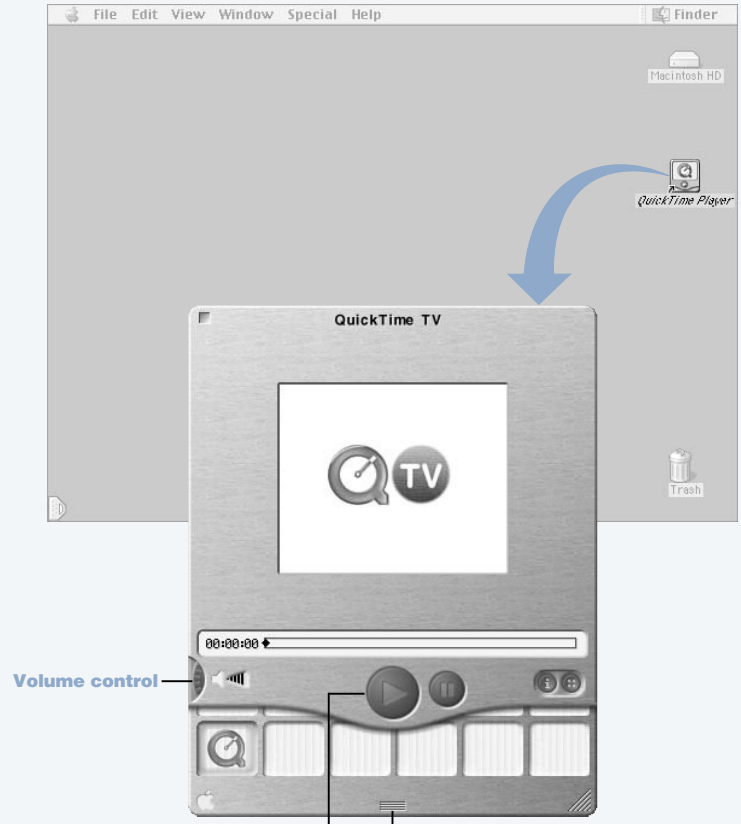


The Apple Store

www.apple.com/store

Your one-stop shop for the latest Apple hardware and software products, including select software and accessories from third-party developers.

QuickTime—Audio and Video on the Internet



What You Can Do

In addition to playing video and music files on your Mac, with QuickTime you can watch live and recorded Internet broadcasts.

To Get Started

1. Connect to the Internet.
2. Double-click the QuickTime Player icon on the desktop.
3. Open the Favorites drawer.
4. Select a channel.

Tips and Tricks

Add additional QuickTime TV channels

Go to www.apple.com/quicktime and click the QuickTime TV link. There you will find all of the available QuickTime channels. You can watch a QuickTime TV channel and with one click add it to the Favorites drawer in QuickTime Player.

Upgrade to QuickTime Pro to do the following:

- Play back full-screen video and resize movies.
- Create streaming movies.
- Work with more than 30 audio, video, and image formats, including Flash.
- Create, open, edit, and save movies and audio, as easily as copying and pasting.

To Learn More

Internet video is just one of the things you can do with QuickTime. To learn more, start with QuickTime Help. To download additional channels, watch the latest movie trailers, and find information on setting up your own Internet streaming server, go to the QuickTime Web site at www.apple.com/quicktime

iMovie 2—Create and Edit Your Own Digital Movies

iMovie monitor

Preview your movie or view video directly from a connected DV camcorder.

Mode switch

Use this to switch between importing from a camcorder and editing.

Clip viewer

Timeline viewer

The clip viewer and the timeline viewer are visual aids for assembling and editing your movie.

Playback controls

Use these to play the movie in the iMovie monitor.

Scrubber bar

Use this to select sections of video.

Shelf

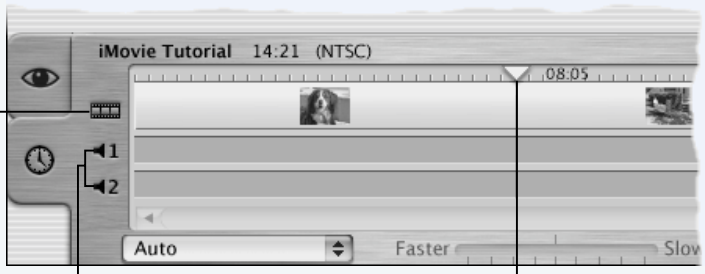
To make clips part of your movie after you import them, drag them from the shelf to the clip viewer.

Editing buttons

Click these to open panels for adjusting and selecting sounds, video effects, titles (text), and transitions. Click the Clips button to see the shelf.

Video track

Lets you work with audio contained in video clips.



Audio tracks

Lets you work with recordings, music, and sound effects.

Playhead

Represents the location of the frame showing in the iMovie monitor. Move the playhead to see where things appear in a movie.

What You Can Do

iMovie is an easy-to-use digital video-editing software application. With iMovie and a digital video camcorder, you can create and edit your own movies. Import video from the camera, edit clips, add transitions, titles, sound effects, and music. Then copy the movie to a camcorder tape or create a QuickTime movie. You can even share your QuickTime movies by placing them on the Web on your Apple iDisk or HomePage.

To Get Started

1. Shoot your video, connect the camera to your computer's FireWire port, and then open iMovie.
2. Click the Import button to import movie clips to the shelf, then add them to your movie by dragging them to the clip viewer.
3. Assemble and edit your movie in the clip viewer and timeline viewer.
4. Add transitions, titles, sound, and music.
5. When you are finished, choose Export from the File menu.

Tips and Tricks

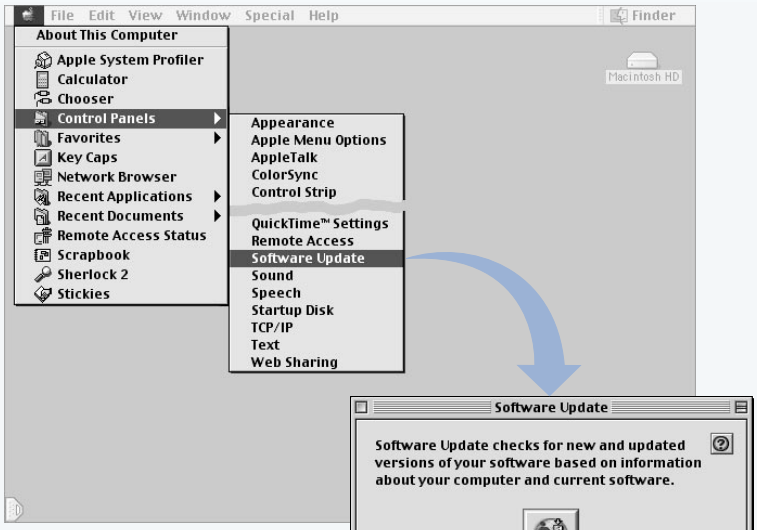
Share your desktop iMovie with your friends and family

Export your movie as a QuickTime Web movie and copy the movie to your iDisk. Then use HomePage to create your own iMovie theater so that others can view your movie on the Internet.

To Learn More

For more information on using iMovie, see the iMovie Tutorial or iMovie Help. For the latest on iMovie, including iMovie updates, additional plug-ins, and a list of compatible DV camcorders, go to the iMovie Web site at www.apple.com/imovie

Auto Updating—Automatically Keep Your Mac on the Cutting Edge



Update Now

Instantly check Apple's Internet servers to see if any updates are available for your software. The Software Update control panel displays all of the updates useful for keeping your computer running smoothly.

Set Schedule

Set the day of the week and time of day to check automatically for software updates.

What You Can Do

Auto updating uses the Internet to download and install the latest updates, drivers, and other enhancements from Apple—automatically. You can even set your Mac to check Apple's server periodically and download and install updated software for you.

To Get Started

1. Connect to the Internet.
2. Choose Control Panels from the Apple menu and then choose Software Update from the submenu.
3. Click the Update Now button.
4. Select the software you want to update and then click Install.

Tips and Tricks

Adjust your Software Update schedule

If you have an Internet connection that is always on, you can set a schedule for your computer so that it checks for software updates at a certain time on specific days of the week. If you have a dial-up connection and you are not connected, Software Update will check the next time you connect.

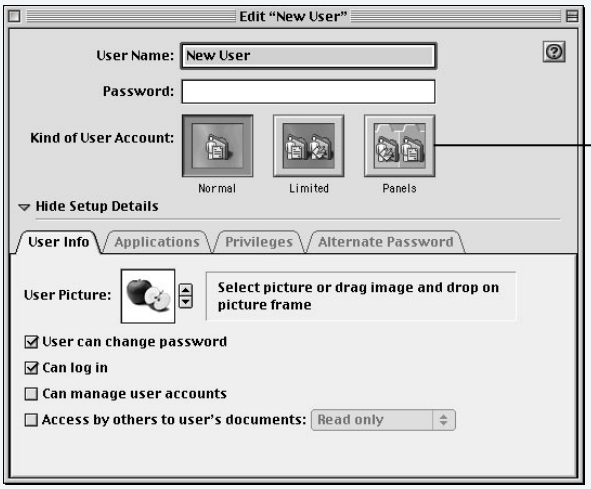
Install new software automatically

You can set up your Mac so that every week it checks for and installs the latest software. Set a schedule for your computer to check for software updates and deselect the "Ask me before downloading new software" checkbox.

To Learn More

For more information on using Software Update, search for "Software Update" in Mac Help. For the latest information on the Mac OS, go to the Mac OS Web site at www.apple.com/macos

Multiple Users—Turn One Mac Into Many



Accounts
Set the appearance of the user's environment. If you want to control the user's access to certain applications, choose Limited or Panels.

What You Can Do

With Multiple Users, you can allow up to 40 users to share a single Mac with their own customized settings and private storage space. For example, users can set their own desktop picture, sort their views the way they like, bookmark favorite Web sites, and do many other things that create, in effect, a personalized Mac for each individual user. You can also specify how much access—and liberty to change things—each individual user can have.

To Get Started

1. Choose Control Panels from the Apple menu and then choose Multiple Users from the submenu.
2. Turn Multiple User Accounts on.
3. Click the Options button to configure overall multiple user settings such as the Welcome message and other options.
4. Click the New User button.
5. Edit the user's information, access privileges, and applications.
6. Close the Multiple Users control panel.

Each time the computer starts up, the login window appears. To go back to the login window after another user has already logged in, choose Log Out from the Special menu.

Tips and Tricks

Create a voice print passphrase

If you connect a USB microphone to your computer, you can log in using voice recognition. First, record yourself speaking a phrase, such as "My voice is my password." Your Mac stores your voice print for comparison. Later, when you log in by speaking your passphrase, your Mac analyzes the biometrics of your voice to make sure you are who you say you are. You can purchase a USB microphone from an Apple-authorized dealer.

To Learn More

For more information on setting up Multiple Users and creating a voice print passphrase, search for "Multiple Users" in Mac Help. For the latest information on the Mac OS, go to the Mac OS Web site at www.apple.com/macos

Mac Help—Answers to All Your Macintosh Questions

Search
Got a question? Type it here and click Search.

CHAPTER 3

Using Your Computer

This chapter provides explanations and instructions for using the important features of your Power Mac G4 computer, including your keyboard and mouse, modem, FireWire ports, USB ports, and networking.

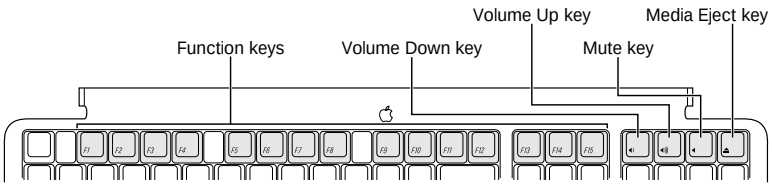
Explanations are provided for

- "Using Your Apple Pro Keyboard and Apple Pro Mouse" on page 36
- "Using USB Devices" on page 38
- "Using FireWire Devices" on page 40
- "Using Your CD or DVD Drive" on page 42
- "Using Your Modem" on page 43
- "Connecting to an Ethernet Network" on page 44
- "Using AirPort Wireless Networking" on page 46
- "Putting the Computer to Sleep to Save Energy" on page 47
- "Attaching SCSI Devices to Your Computer" on page 48
- "Transferring Information Between Two Macintosh Computers" on page 49
- "Using the Computer as a Server Without a Monitor" on page 49

Using Your Apple Pro Keyboard and Apple Pro Mouse

You can quickly adjust settings such as volume and eject CD or DVD discs using the keyboard.

Your Apple Pro Keyboard has customizable function keys that you can set up to open your frequently used applications or documents. For example, you can assign function keys to open your Web browser, word processor, or favorite game. Once applications are open, you can use the customized function keys to switch quickly between them.



Customizing Function Keys

The first time you press an unassigned function key, a dialog box appears that lets you assign any of the function keys to an application. After that, you can change function key assignments using the Keyboard control panel.

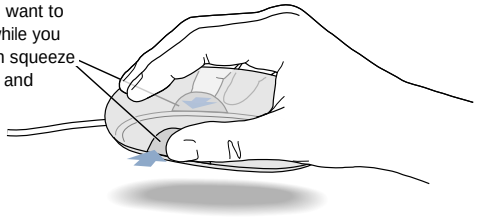
Using the Standard Function Keys

You can quickly change a key from a control or customized function key to a standard function key by pressing the Option key on your keyboard and the customized function key at the same time. You can also use the Keyboard control panel to reverse the keys so that the standard function keys are primary and the controls and customized function keys are secondary.

Using Your Apple Pro Mouse

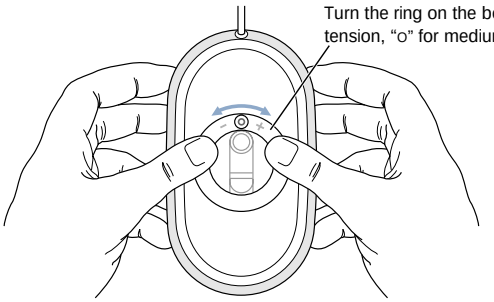
To position the pointer using your mouse, move the mouse over any suitable surface such as your desktop, mouse pad, or other textured surface. (Some smooth, glassy surfaces provide less pointer control than others.) To click an object, press down once on the mouse body until you feel a click. To double-click an item, press down twice in quick succession.

If you run out of room and want to keep the mouse clicked while you lift it, click the mouse, then squeeze the sides with your thumb and fingers as you lift.



You can adjust the feel of your mouse by turning the dial underneath. Turning the dial one direction makes the feel of clicking the mouse stiffer; turning it the other way makes clicking the mouse easier.

Turn the ring on the bottom of the mouse to "+" for more tension, "o" for medium tension, and "–" for less tension.

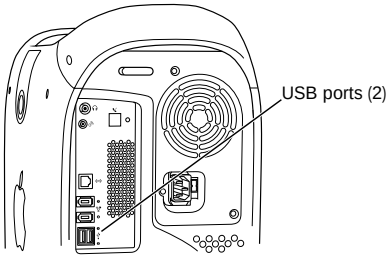


For More Information About Your Keyboard and Mouse

Additional information on configuring the keyboard controls and customizable function keys is available in Mac Help. Choose Mac Help from the Help menu and search for "keyboard" or "mouse."

Using USB Devices

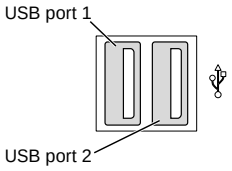
Your Power Mac G4 comes with two USB ports, which you can use to connect many types of external devices, including printers, digital cameras, microphones, game pads, joysticks, keyboards, mouse devices, and storage devices. USB makes it easy to connect external equipment. Once you connect the device, it is ready to use. You don't need to restart your computer.



To use a USB device with your computer, connect the device to the computer and install its software or configure your computer to work with the device once. From then on, your computer automatically loads the correct software whenever you attach the device.

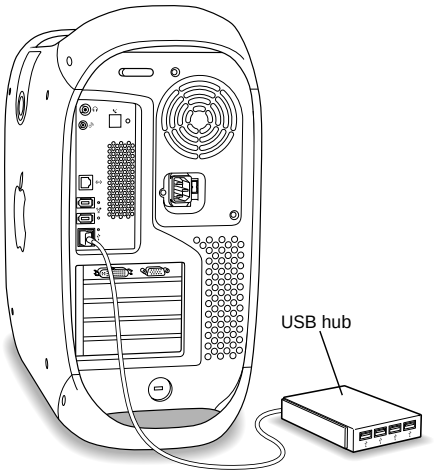
Note: Apple has already included software to work with many USB devices. In most cases you do not need to install the software that came with the device. If, when you connect a USB device, your Power Mac G4 cannot find the correct software, it asks you to search the Internet to find it.

Some devices may need to be connected to a particular USB port. The ports are numbered as follows:



Connecting Multiple USB Devices

Your Power Mac G4 has two USB ports. Your keyboard or monitor may also have an available USB port that you can use to connect devices. If you want to connect more devices, purchase a USB hub. The USB hub connects to an open port on your computer and provides additional USB ports (usually four or seven).



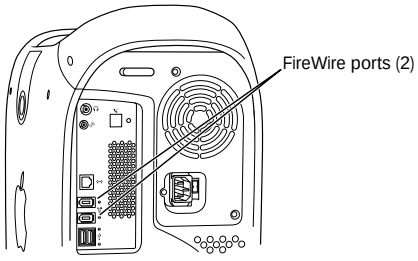
For More Information on USB

Additional information on USB is available in Mac Help. Choose Mac Help from the Help menu and search for “USB.” You can also find information on Apple’s USB Web site at www.apple.com/usb

For information on USB devices available for your computer, go to the Macintosh Products Guide at www.apple.com/guide

Using FireWire Devices

Your computer has two FireWire ports. FireWire is a high-speed data transfer system that lets you easily connect and disconnect external devices—such as digital video (DV) cameras, printers, scanners, and hard disks. You can connect and disconnect FireWire devices without restarting your computer.



These are some of the things you can do with FireWire:

- Connect a digital video camera and capture or transfer high-quality video directly to your computer. Then you can use video-editing software such as Apple's iMovie to edit the video. Your accessory kit comes with a standard 6-pin to 4-pin FireWire cable that you can use to connect most digital video cameras.
- Connect an external FireWire hard disk drive and use it to back up data or transfer files. If you have installed software for your FireWire hard disk, the FireWire disk icon automatically appears on your desktop after you connect the disk drive to your Power Mac G4. Some FireWire hard disks get their power through the FireWire cable, so you don't need to connect an external power supply.
- If you have a problem with your computer that prevents you from starting up or you want to transfer files, you can use FireWire to connect your Power Mac G4 to another computer so that your Power Mac G4 appears as an external hard disk on the other computer (a feature known as "FireWire target disk mode").

To use a FireWire device with your computer, connect the device to the computer and install any software that came with the device. Your computer automatically senses when you attach a new device.

To start up from a FireWire hard disk that has the Mac OS on it, use the Startup Disk control panel to select the FireWire hard disk as the startup disk. If your FireWire hard disk doesn't appear or can't be selected in the control panel, consult the FireWire hard disk vendor for updated software drivers.

FireWire Target Disk Mode

You can use FireWire to connect your Power Mac G4 to another computer and then have it appear as an external hard disk on the other computer. You can then share or transfer files.

Important The computer you connect your Power Mac G4 to must have FireWire version 2.3.3 or later installed. Use Apple System Profiler, available in the Apple menu, to check the version of FireWire installed. If you have an older version, check for an update at the Apple FireWire Web site at www.apple.com/firewire

To connect your Power Mac G4 in FireWire target disk mode, follow these steps:

1. Use a FireWire cable with a 6-pin connector on each end to connect your Power Mac G4 to another FireWire-equipped computer.
2. Start up or restart your Power Mac G4 and immediately hold down the T key.

   Your Power Mac G4 display shows the FireWire disk mode indicator, and the Power Mac G4 internal hard disk icon appears on the desktop of the other computer.
3. When you are finished transferring files, drag the Power Mac G4 hard disk icon to the Trash to unmount the drive.
4. Press the power button on the Power Mac G4 to shut it down and then disconnect the FireWire cable.

For More Information on FireWire

Additional information on FireWire, including setting up a network of FireWire devices, is available in Mac Help. Choose Mac Help from the Help menu, and search for “FireWire.” You can also find information on Apple’s FireWire Web site at www.apple.com/firewire

For information on the FireWire devices available for your computer, go to the Macintosh Products Guide at www.apple.com/guide

Using Your CD or DVD Drive

You can install or run software from CD discs using a CD or DVD drive. You can play multimedia on CD discs and music from audio CDs. If you have a DVD drive, you can also play DVD movies and use most DVD discs. CD-RW and DVD-R drives also enable you to record information on discs.

Note: If you have older software that comes on floppy disks, contact the software manufacturer to see if the software is available on a CD or purchase an external USB floppy disk drive for your Power Mac G4 from your Apple dealer or the Apple Store (www.apple.com/store).

Inserting a Disc

To install or use programs from a CD or DVD disc, follow these steps:

1. With the computer turned on, press the drive button on the outside of the drive.
2. Place a disc in the tray, with the label facing up, and make sure the disc is lying flat.
3. Gently push the tray in to close it.
4. When the icon for the disc appears on the screen, the disc is ready to use.

Ejecting a Disc

You eject a disc by dragging the disc icon to the Trash, or by pressing the Media Eject key on your keyboard. You cannot use the drive button to eject a disc from the CD or DVD drive.

If you are unable to eject a disc, try the following:

1. Shut down the computer.
2. Carefully pull down the door covering the front of the drive tray and locate the small hole next to the Open button below the drive tray.
3. Carefully insert the end of a large straightened paper clip into the hole.
4. Push firmly until the tray opens.
5. Pull out the tray, remove the disc or cartridge, and push the tray in to close it.

Playing DVD and Audio Discs

If you have a DVD drive, you can use it to play DVD-Video discs on your computer. Insert the DVD disc and then choose Apple DVD Player from the Apple menu. You can also open Apple DVD Player in the Applications folder on your hard disk. To listen to a standard audio CD, use the AppleCD Audio Player program in the Applications folder. You can also use the AutoPlay section of the QuickTime Settings control panel or the Play portion of the Control Strip to control audio CD playback.

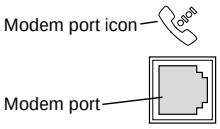
For More Information on Your CD or DVD Drive

For instructions on using Apple DVD Player, open the player and then choose Apple DVD Player Help from the Help menu. Additional information on using CDs or DVDs is available in Mac Help. Choose Mac Help from the Help menu and search for "discs."

Using Your Modem

Your Macintosh comes with an Apple 56K internal modem installed.

To connect the Apple 56K internal modem, plug one end of a phone cord into the modem port on the back of the computer and the other end into a standard RJ-11 telephone wall jack.



Important Make sure you connect the internal modem to an analog phone line—the kind used typically in homes. The modem will not work with a digital phone line.

More information about the internal modem is available in Mac Help (in the Help menu).

Warning Disconnect your modem from the phone jack during lightning or thunder storms. This will prevent a destructive voltage overload from damaging the modem.

Using an External USB Modem

To connect an external USB modem, use a USB cable to connect the modem to a free USB port on the keyboard, computer, USB monitor, or USB hub.

Check the documentation that came with the modem to see if it needs to be plugged into a power outlet. Also look for instructions about installing modem software and connecting the modem to a telephone line.

Connecting to an Ethernet Network

Your computer comes with built-in 10/100/1000 megabit per second (Mbps) twisted-pair Ethernet networking capability. Connecting to a network gives you access to other computers. You may be able to store and retrieve information, use network printers, modems, and electronic mail, or connect to the Internet. You can also use Ethernet to share files between two computers or set up a small network.

If you're connecting to an existing network, you may be able to get information about the network and the network software you need from a network administrator who oversees its operation. Identify your organization's network administrator before you begin.

Follow these guidelines when selecting a cable for your network:

Type of twisted-pair Ethernet	Use twisted-pair cable types
10 Mbit	Category 3, 5, or 6
100/1000 Mbit	Category 5 or 6

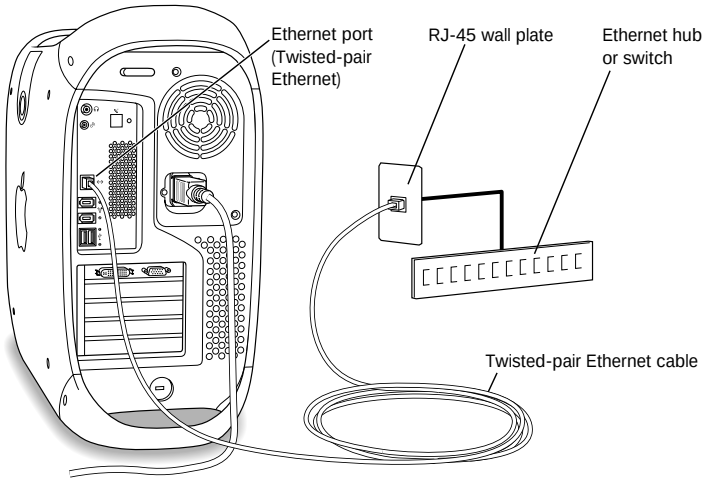
Connecting to a Twisted-Pair Ethernet Network

You can connect directly to a 10/100/1000 twisted-pair Ethernet network.

Note: You can also connect your computer to an Ethernet network that uses thin coaxial cables. To do this, you need an RJ-45–to–Thin Coax adapter (available from other manufacturers). See your Apple-authorized dealer for more information on Ethernet media adapters.

To connect your Macintosh to a centralized 10/100/1000 twisted-pair Ethernet network, follow these steps:

1. Plug one end of an RJ-45 twisted-pair cable into the Ethernet port on your Macintosh.
2. Plug the other end of the cord into an RJ-45 wall outlet or external hub that is connected to a twisted-pair Ethernet network.



After you start up the computer, you need to configure the software for your network connection. Your network administrator can provide the necessary information. You can also get help configuring your network software using Mac Help (in the Help menu).

For More Information on Using Ethernet

Additional information, including setting up an Ethernet network or transferring files using Ethernet, is available in Mac Help. Choose Mac Help from the Help menu and search for "Ethernet" or "network."

For information on networking products you can use with your Power Mac G4, go to the Macintosh Products Guide at www.apple.com/guide

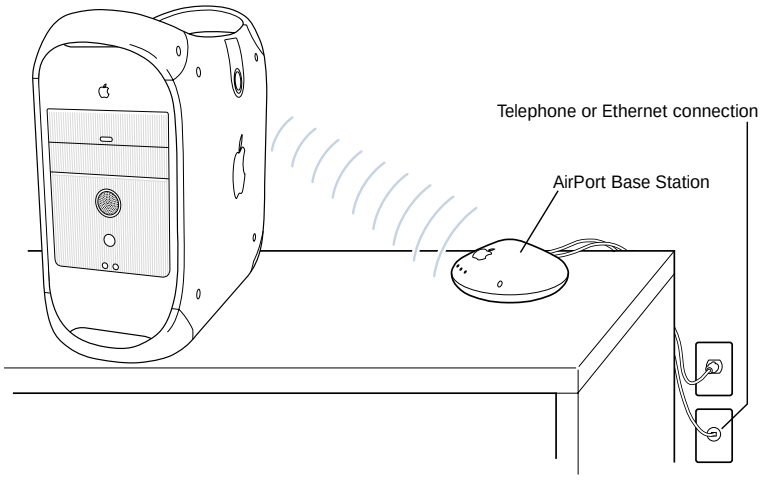
Using AirPort Wireless Networking

AirPort offers an easy and affordable way to provide wireless Internet access anywhere in the home, at work, or in the classroom. Instead of using traditional cables, AirPort uses wireless local area network (LAN) technology to provide wireless communication between multiple computers. Through a wireless network you can set up access to the Internet, transfer files, play multiplayer games, and more.

Your Power Mac G4 is AirPort-ready. The only thing you need to add is an AirPort Card. See “Installing an AirPort Card” on page 70. You install the AirPort Card in a slot inside the computer and connect it directly to the end of a built-in antenna cable.

How AirPort Provides Wireless Internet Access

With AirPort, you set up a wireless connection to a device known as a *base station,* which has a physical connection to the Internet. AirPort technology works like a cordless telephone. The handset of the cordless phone makes a wireless connection to the base, which is connected to the telephone line. Similarly, your computer makes a wireless connection to the base station connected to the telephone line or your Ethernet network.



Wireless Network Connections

If you install an AirPort Card, you can

- connect your computer to a computer network that has wireless access
- use your computer to provide network access for other computers using wireless cards
- establish a wireless connection and share information with another computer that has an AirPort Card

Check with your network administrator for more information about reaching the network's wireless access point.

> **Warning** Several kinds of objects placed near the computer can cause interference. See the instructions that come with an AirPort Card or AirPort Base Station to learn about avoiding interference. You can also find more information in the Apple Technical Information Library: til.info.apple.com

For More Information on AirPort

To purchase an AirPort Card or AirPort Base Station, contact your Apple-authorized dealer or go to the Apple Store at www.apple.com/store

Additional information on AirPort is available in online Help. Choose Help Center from the Help menu and choose AirPort Help. You can also find information on Apple's AirPort Web site at www.apple.com/airport

Putting the Computer to Sleep to Save Energy

Power Mac G4 computers are set to go to sleep after a period of inactivity. Sleep is a state in which your computer uses very little power. You can also put the computer to sleep whenever you want.

Note: Macintosh Server G4 computers are not set to sleep, but you can set them to do so.

When the computer goes to sleep, it saves its state so that when you wake the computer, your programs, documents, and control panel settings are exactly as you left them. You use the Energy Saver control panel, part of the computer's system software, to adjust sleep settings. For further energy savings, shut down the computer and disconnect it from its power source or turn off the power strip when the computer is not in use.

To put your computer to sleep, you can

- press the power button on the front of the computer
- select a sleep mode in the Energy Settings portion of the Control Strip
- choose Sleep from the Special menu

When the computer is in sleep, the front panel power button light pulses.

You wake the computer by pressing the power button on the front panel of the computer or by pressing a key on the keyboard. With some Apple monitors, you can also use the monitor power button to put the computer to sleep and wake it.

Not all PCI cards or replacement AGP cards comply with the computer's power management standards. If you install a non-compliant card, the computer can still enter sleep mode, but it will not achieve maximum energy savings. You can use the Apple System Profiler to find out whether an installed card is compliant.

For more information about energy-saving options, see Mac Help.

Attaching SCSI Devices to Your Computer

Some Power Mac G4 computer configurations come with an Ultra160 Dual Channel SCSI card installed in a PCI slot with one or more internal SCSI hard disks connected to it. You can install additional internal SCSI hard disk drives up to a maximum of three drives. It's recommended that you only connect SCSI Ultra160 LVD hard disk drives to the internal port of the Dual Channel SCSI card. You can connect external SCSI devices, including older drives with slower data transfer rates, to the external port of the Ultra160 Dual Channel SCSI card. Because the card has two channels, one connected to the internal port and another connected to the external port, connecting older devices to the external port doesn't slow down the transfer rate of the internal hard disk drives.

Apple recommends that you use only SCSI Ultra160 LVD devices as internal hard disk drives.

To connect older SCSI devices that use a 25-pin or a 50-pin connector—such as Zip drives, scanners, or DAT drives—you need to purchase SCSI adapters, or purchase and install an additional "legacy" SCSI PCI card (one that supports older devices).

For more information about using different types of SCSI devices with your computer, see the Tech Info Library at Apple's Web site: til.info.apple.com

Transferring Information Between Two Macintosh Computers

If two Macintosh computers are not connected by a network, you can transfer information between them by connecting them with an Ethernet crossover cable (in effect creating a small network of just two computers), which you can buy from an Apple-authorized dealer. You connect the cable to each computer's Ethernet port and then turn on file sharing on both computers, or configure the computers' Ethernet settings to create a small network. For more information about configuring such an Ethernet connection, see Mac Help.

You can also connect two Macintosh computers using a FireWire cable. You can then use FireWire target disk mode to transfer files from one computer to another. For more information about using FireWire target disk mode, see "FireWire Target Disk Mode" on page 41.

If you have an Internet connection, you can also transfer files via the Internet to your iDisk storage area on iTools, where you or another iTools user can download them. For more information about iTools, see "iTools—Free Internet Services for Mac Users" on page 22.

Using the Computer as a Server Without a Monitor

You can set up your computer to run as a server without an attached monitor. Follow these steps:

1. Follow all the steps described in Chapter 1 to set up your computer, including connecting a monitor, mouse, and keyboard.
2. Configure your server software as follows:
   - Configure network access.
   - Configure the Apple Network Assistant Security application so the server can be controlled.
   - Set passwords for access to the server.
   - Set AppleShare IP services to start up when the system starts up.
   - Set the computer not to go to sleep. Macintosh Server G4 computers are shipped this way.
3. Be sure network services are operating properly.
4. Turn off the server and disconnect the monitor.
5. Turn on the server.

   When you turn on your server, the AppleShare IP services launch automatically after the system starts up.

   If you're using remote access software, follow the instructions that came with your software for logging in to and controlling the server.

CHAPTER 4

Working Inside Your Computer

This chapter provides information and instructions for working inside your computer.

Instructions are provided for the following procedures:

- "Opening the Computer" on page 52
- "Installing Memory" on page 54
- "Installing Internal Storage Devices" on page 56
- "Installing a PCI Expansion Card or Replacing the AGP Card" on page 66
- "Installing an AirPort Card" on page 70
- "Replacing the Battery" on page 71

Warning Apple recommends that you have an Apple-certified technician install memory, PCI expansion cards, and internal storage devices. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install these items yourself, you risk damaging your equipment, and such damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

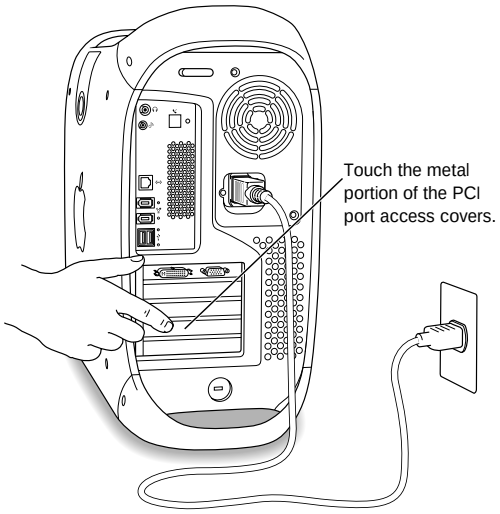
Opening the Computer

1 To shut down your computer, choose Shut Down from the Special menu. Wait five minutes to allow the computer's internal components to cool.

> **Warning** Always shut down the computer before opening it to avoid damaging its internal components or the components you want to install. Do not open the computer or attempt to install items inside it while it is turned on.

2 Unplug all the cables from the computer except the power cord.

3 Touch the metal PCI access covers on the back of the computer to discharge any static charge.



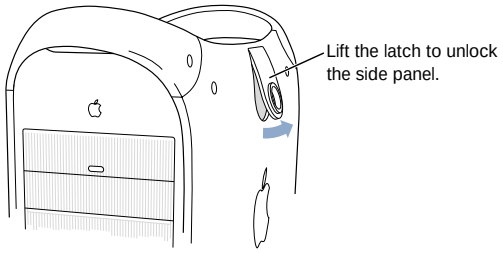
Important Always do this before you touch any parts, or install any components, inside the computer. To avoid generating static electricity, do not walk around the room until you have finished installing the expansion card, memory, or internal storage device and closed the computer.

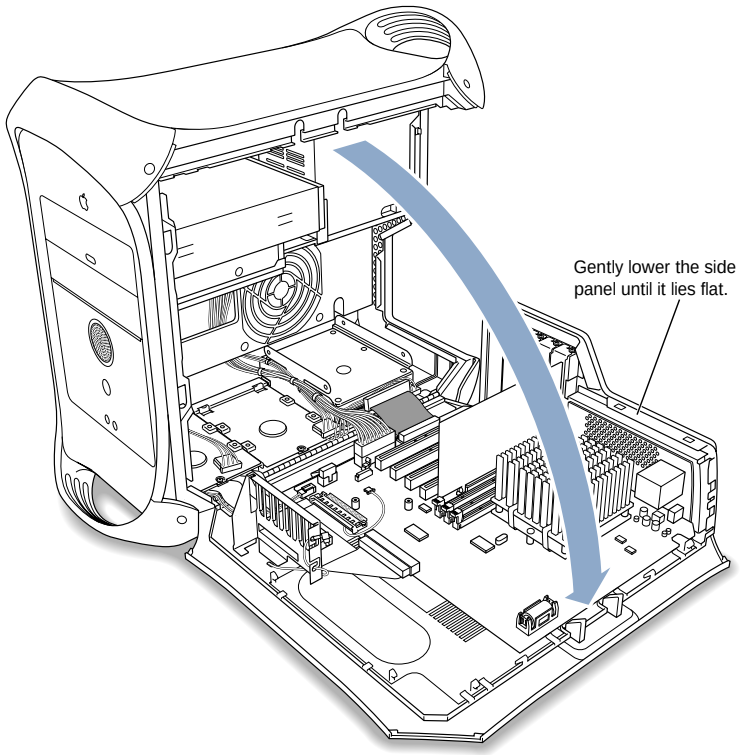
4 Unplug the power cord.

> **Warning** The power supply in your computer is a high-voltage component and should not be opened for any reason, even when the computer is off. If the power supply needs service, contact your Apple-authorized dealer or service provider.

5 Lift the latch on the side of the computer and gently lower the side panel onto a clean, flat surface, preferably onto a soft, clean cloth.

Note: If the latch won't lift, check that the security lock port and lockable cover latch in the back of the computer are not locked.





Installing Memory

You can install additional dynamic random-access memory (DRAM) in packages called Dual Inline Memory Modules (DIMMs) in the three DRAM DIMM slots on your computer's main logic board. You can expand your computer's DRAM to a maximum of 1536 megabytes (1.5 gigabytes). To check the amounts of DRAM and video memory installed, use the Apple System Profiler program.

If you install 512 MB DIMMs, they must have 256 megabit (Mbit) devices. You can also install 256 MB DIMMs that have 256 Mbit or 128 Mbit devices. You can install different size DRAM DIMMs in any order in any DIMM slot. To check the compatibility of your DIMMs, see the Macintosh Products Guide on Apple's Web site: www.apple.com/guide

DIMMs must fit these specifications:

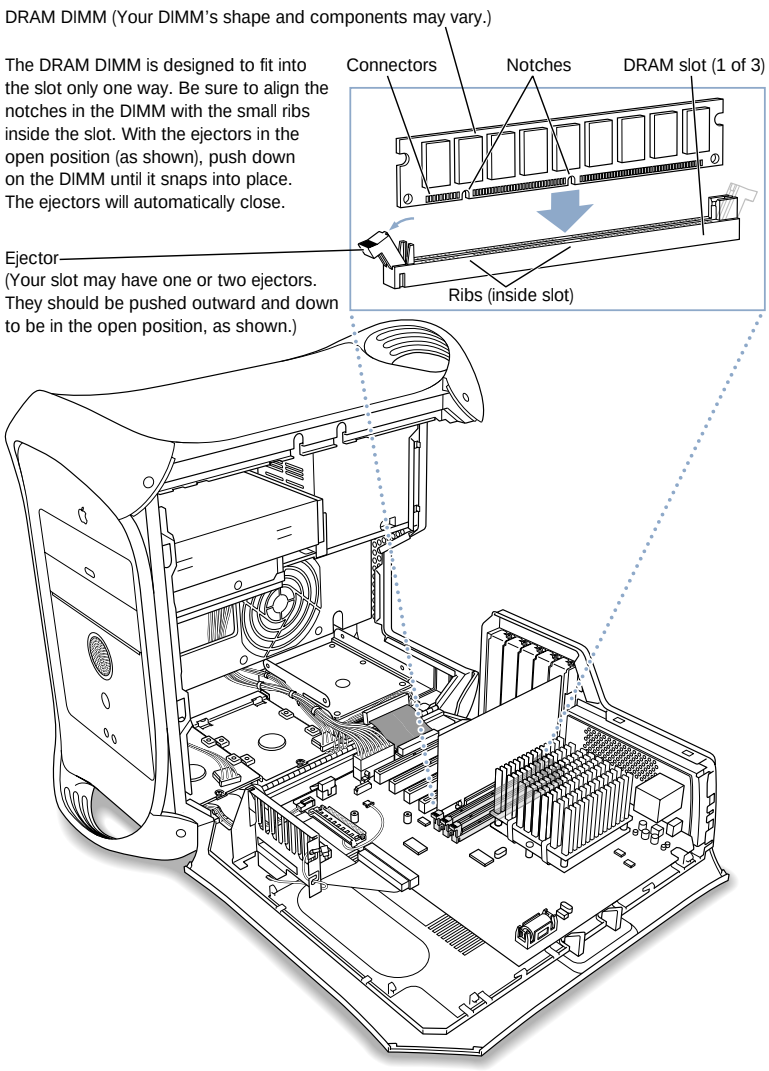
- "PC-133" Synchronous DRAM (SDRAM)
- 3.3 volt (V)
- 64-bit wide, 168-pin module
- Maximum number of memory devices on a DIMM is 16.
- Unbuffered; do not use registered or buffered SDRAM.
- Height must not exceed 2.0 inches.

Important DIMMs from older Macintosh computers are not compatible with your Power Mac G4. Only "PC-133" DIMMs are compatible. Do not use older DIMMs even if they fit into the DRAM DIMM slots.

1 Open the ejectors on the DRAM DIMM slots you want to use by pushing down on them.

2 Align a DRAM DIMM in the DRAM slot as pictured and push the DIMM down until the ejectors snap into place.

Important Do not touch the DIMM's connectors. Handle the DIMM only by the edges.


DRAM DIMM (Your DIMM's shape and components may vary.)
The DRAM DIMM is designed to fit into the slot only one way. Be sure to align the notches in the DIMM with the small ribs inside the slot. With the ejectors in the open position (as shown), push down on the DIMM until it snaps into place. The ejectors will automatically close.
Connectors
Notches
DRAM slot (1 of 3)
Ejector
(Your slot may have one or two ejectors. They should be pushed outward and down to be in the open position, as shown.)
Ribs (inside slot)

3 Close the computer.

Installing Internal Storage Devices

Your Macintosh has five internal drive bays. Three are in the lower part of the computer and two are in front on top. In many configurations, a single hard disk drive occupies a lower bay. One of the upper bays contains a CD or DVD drive, and you can purchase and install an optional Zip drive in the other upper bay.

You can add SCSI and ATA disk drives to the empty lower drive bays.

Drives must meet these specifications:

- *Width:* 3.9 inches (102 mm)
- *Depth:* 5.7 inches (147 mm)
- *Height:* 1.0 inches (ATA), 1.6 inches (SCSI)

The computer provides support for the following types of internal storage devices:

- ATA devices, including ATA, ATA-2, ATA-3, up to ATA-6 devices
- Ultra ATA devices
- Ultra-66 ATA devices
- ATAPI drives, including CD-ROM, CD-RW, DVD-ROM, DVD-R, and Zip drives
- Wide Ultra SCSI devices (requires an additional SCSI PCI card)
- Ultra2 and Ultra160 low-voltage differential (LVD) SCSI devices (requires a SCSI PCI card)

For more information about requirements and devices supported, see your Apple-authorized dealer and the support section of Apple's Web site: www.apple.com/support

Installing Ultra ATA Drives

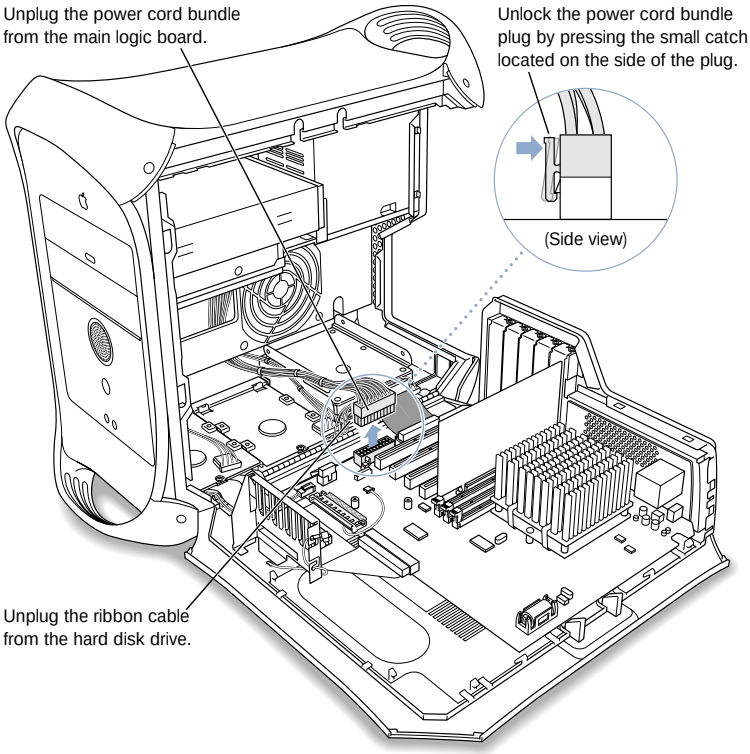
Your Macintosh can accommodate two internal 1-inch-high ATA devices in the U-shaped drive carrier in drive position 3 in the computer. If your computer has one Ultra ATA drive, it sits in the lower portion of this U-shaped drive carrier. You can install a second ATA device in the upper part of the carrier.

The drive that came with your Macintosh is designated the “master drive” (sometimes called “drive 0”). The ATA drive you add as a second drive is called the “slave drive” or “drive 1.”

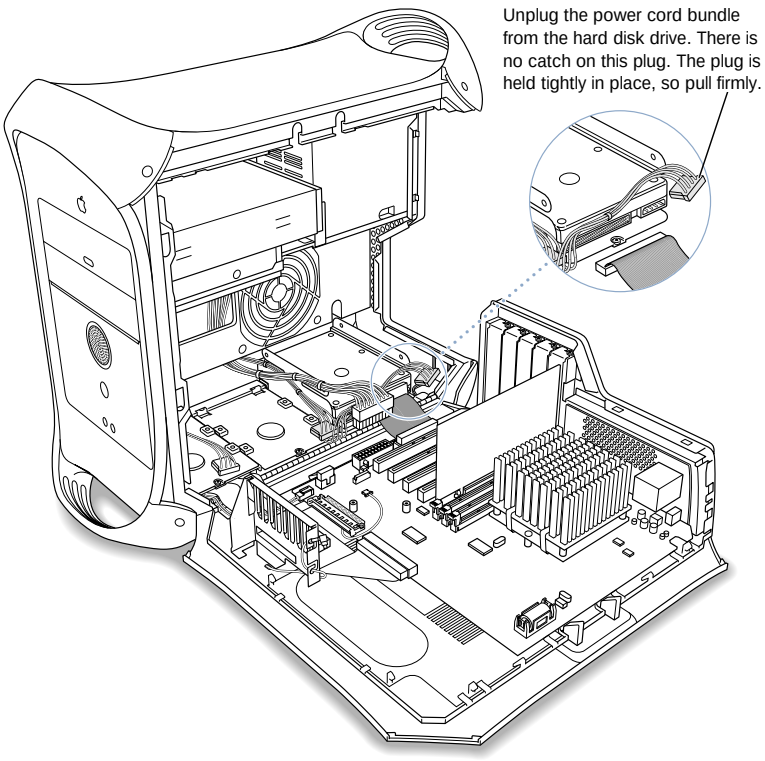
1 Configure your drive as a slave drive by setting the appropriate jumpers. Contact your drive manufacturer or consult the manufacturer’s Web site to determine the correct settings.

Note: Your Macintosh doesn’t work with Ultra ATA devices set for cable select mode.

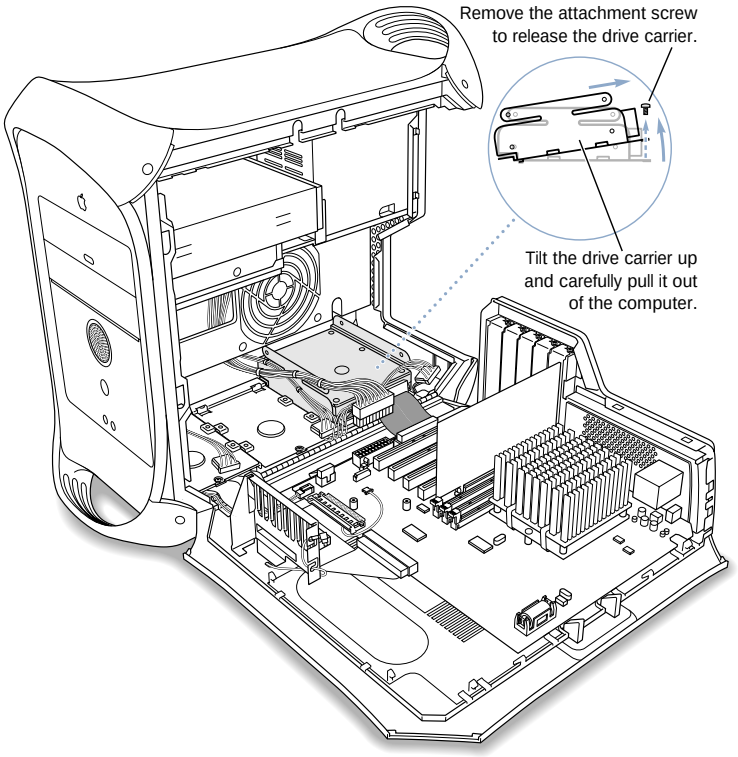
2 Unplug the power cord bundle from the main logic board and the ribbon cable from the drive.


Unplug the power cord bundle from the main logic board.
Unlock the power cord bundle plug by pressing the small catch located on the side of the plug.
(Side view)
Unplug the ribbon cable from the hard disk drive.

3 Remove the power cord bundle from the drive.

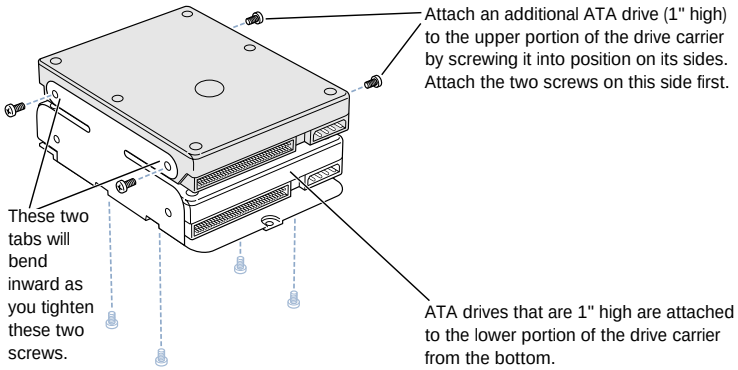

Unplug the power cord bundle from the hard disk drive. There is no catch on this plug. The plug is held tightly in place, so pull firmly.

4 Remove the low-profile attachment screw from the drive carrier and tilt the carrier up to remove it from the computer.


Remove the attachment screw
to release the drive carrier.
Tilt the drive carrier up
and carefully pull it out
of the computer.

5 Install the ATA drive in the U-shaped bracket.

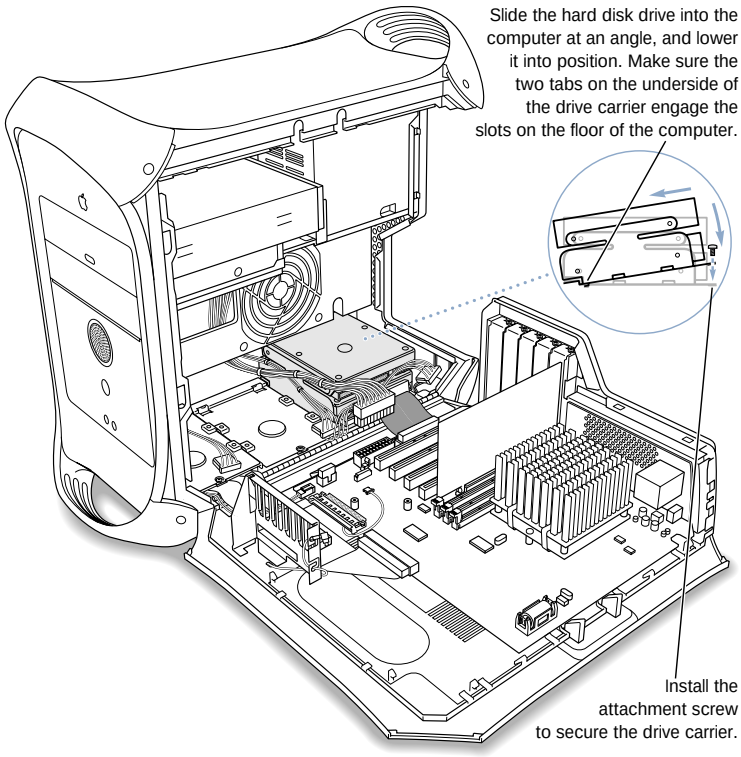
Note: The tinted screws illustrated below indicate the four low-profile screws that came in the computer's accessory kit. The untinted screws show the screws that came with the new drive.


Attach an additional ATA drive (1" high) to the upper portion of the drive carrier by screwing it into position on its sides. Attach the two screws on this side first.
These two tabs will bend inward as you tighten these two screws.
ATA drives that are 1" high are attached to the lower portion of the drive carrier from the bottom.

Position the hard disk drive on the drive carrier so that the ribbon cable connector and the power cord connector are accessible.

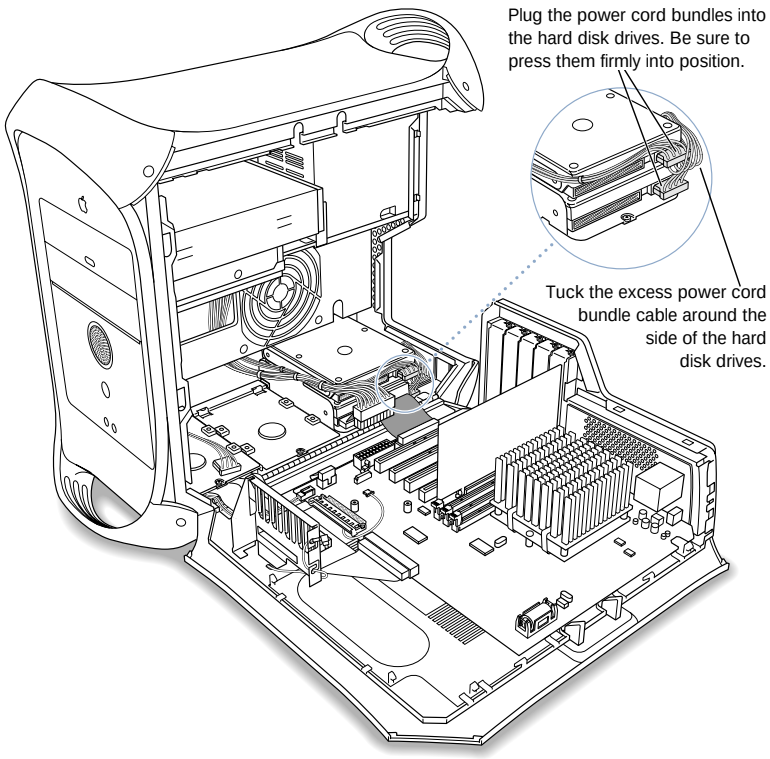
If you're installing a drive in the lower part of the U-shaped bracket, use the low-profile screws to attach the bottom of the drive to the carrier.

6 Replace the carrier and drive.

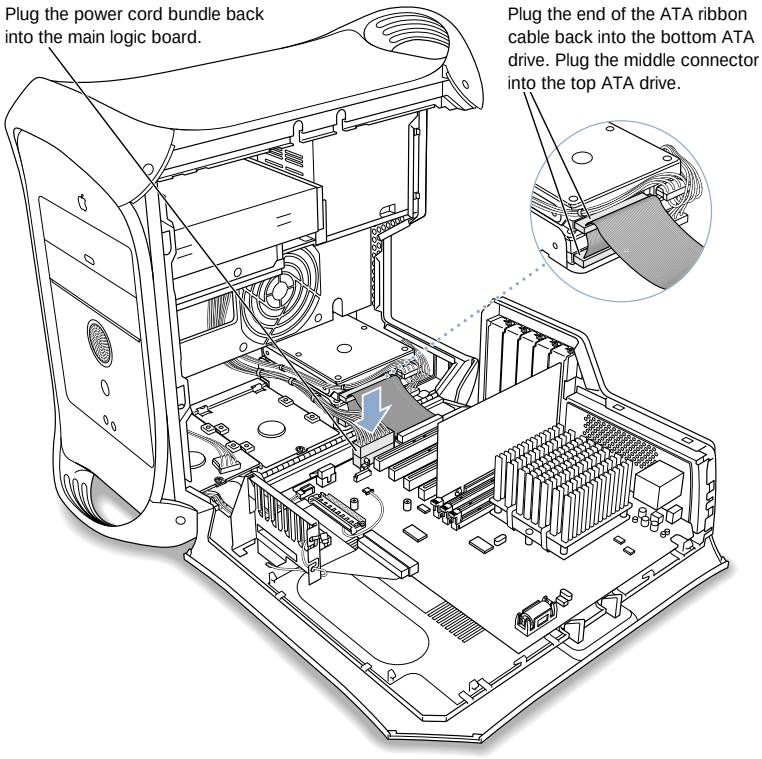

Slide the hard disk drive into the computer at an angle, and lower it into position. Make sure the two tabs on the underside of the drive carrier engage the slots on the floor of the computer.
Install the attachment screw to secure the drive carrier.

7 Reinsert the low-profile attachment screw you removed from the carrier in step 4.

8 Plug the power cord bundles into the hard disk drives.


Plug the power cord bundles into the hard disk drives. Be sure to press them firmly into position.
Tuck the excess power cord bundle cable around the side of the hard disk drives.

9 Reconnect the main power cord bundle to the main logic board and the ribbon cable to the drives.


Plug the power cord bundle back into the main logic board.
Plug the end of the ATA ribbon cable back into the bottom ATA drive. Plug the middle connector into the top ATA drive.

10 Close the computer.

Installing Ultra160 LVD SCSI Drives

If your Macintosh has an internal Ultra160 LVD SCSI drive, you can connect up to two more internal Ultra160 LVD SCSI drives to the PCI card and cable inside the computer. This cable has the required connectors and a built-in terminator, so you don't need to add one.

If you have one Ultra160 LVD SCSI drive, it is installed in lower drive position 1. The computer uses the drive in position 1 to start up.

Note: If your computer doesn't have a SCSI hard disk drive, you need to install a SCSI PCI card in your computer to connect SCSI hard disks.

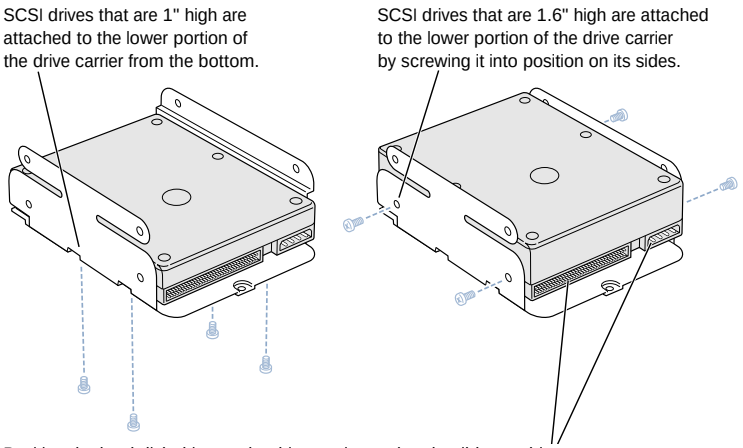
The procedures for disconnecting and connecting a SCSI hard disk drive and for removing and inserting drive carriers are nearly identical to those presented in the ATA drive installation instructions on page 57. Follow the ATA drive instructions when installing a SCSI drive. However, before installing your SCSI drive, note the following differences:

When you configure your SCSI hard disk drive

Assign a unique SCSI ID number to each new device. A single factory-installed drive uses SCSI ID 0; a second factory-installed drive uses SCSI ID 1; and a third factory-installed drive uses SCSI ID 2. The SCSI PCI card has been assigned ID 7. If you select one of these numbers for a new drive, the drive will not work properly.

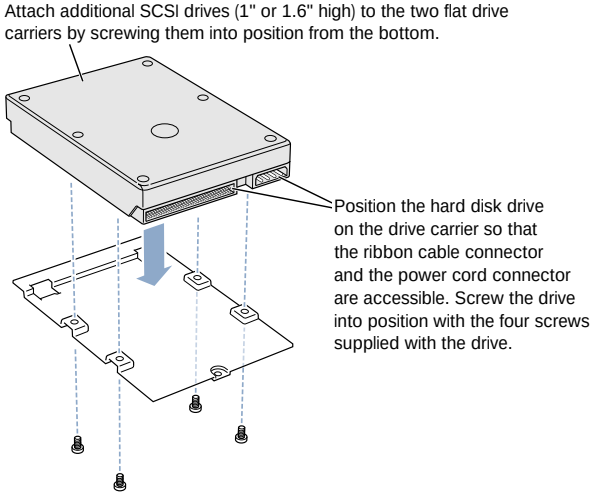
When you attach the drive to the carrier

If you're installing a SCSI drive in a computer that came with one SCSI drive, install the new drive in position 3 (see "Inside Your Power Mac—Your Computer's Internal Expansion Options" on page 18). Do not install a SCSI drive in the top position of the U-shaped bracket.

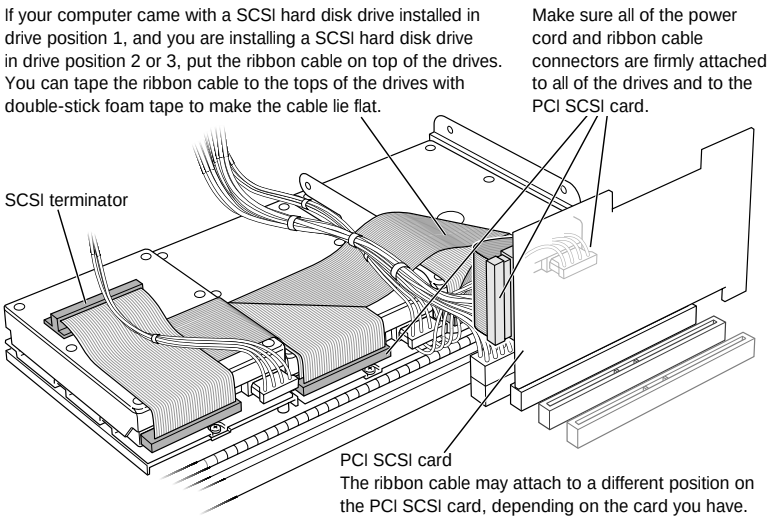

SCSI drives that are 1" high are attached to the lower portion of the drive carrier from the bottom.
SCSI drives that are 1.6" high are attached to the lower portion of the drive carrier by screwing it into position on its sides.

Position the hard disk drive on the drive carrier so that the ribbon cable connector and the power cord connector are accessible.

Note: The tinted screws in the previous illustration indicate the four low-profile screws that came with the computer. The untinted screws in the following illustration show the screws that come with the new drive.


Attach additional SCSI drives (1" or 1.6" high) to the two flat drive carriers by screwing them into position from the bottom.
Position the hard disk drive on the drive carrier so that the ribbon cable connector and the power cord connector are accessible. Screw the drive into position with the four screws supplied with the drive.

When you replace the carrier and reconnect the drive cables


If your computer came with a SCSI hard disk drive installed in drive position 1, and you are installing a SCSI hard disk drive in drive position 2 or 3, put the ribbon cable on top of the drives. You can tape the ribbon cable to the tops of the drives with double-stick foam tape to make the cable lie flat.
Make sure all of the power cord and ribbon cable connectors are firmly attached to all of the drives and to the PCI SCSI card.
SCSI terminator
PCI SCSI card
The ribbon cable may attach to a different position on the PCI SCSI card, depending on the card you have.

Installing a PCI Expansion Card or Replacing the AGP Card

You can expand the capabilities of your Power Mac G4 by installing cards in its expansion slots. The computer has five expansion card slots, four of which accommodate peripheral component interconnect (PCI) cards and one that accepts an AGP card.

AGP cards and PCI cards have different connectors, so you cannot insert a PCI card into the AGP slot.

About AGP Cards

Your AGP card, installed in slot 1, provides the computer's monitor port. Slot 1 is designed specifically to accept AGP cards that have a 32-bit data width. This 66 megahertz (MHz) slot accommodates 3.3 volt (V) AGP cards (see the image on page 68).

You can replace the card that came with the computer with an AGP 1X card, 2X card, or 4X card. A replacement AGP card must have a driver compatible with the Mac OS. Maximum power consumption for a replacement AGP card should not exceed 20 watts (W).

About PCI Expansion Cards

Your Macintosh has four expansion slots, labeled 2, 3, 4, and 5, which accept PCI cards up to 12 inches long. Some models come with a SCSI PCI card installed in one of these slots. Install only expansion cards that come with Macintosh driver software and that comply with the PCI 2.1 standard.

The PCI slots can accommodate mixed voltage (5.0 V or 3.3 V) cards with 32-bit or 64-bit data widths and a 33 MHz frequency. You can add a 66 MHz card to a PCI slot if the card can operate at the lower 33 MHz rate.

> **Warning** Do not use cards that function only at 66 MHz in the PCI slots. Damage to your equipment could result. If you have a 66 MHz card, check the card's manufacturer to see if it also works at 33 MHz.

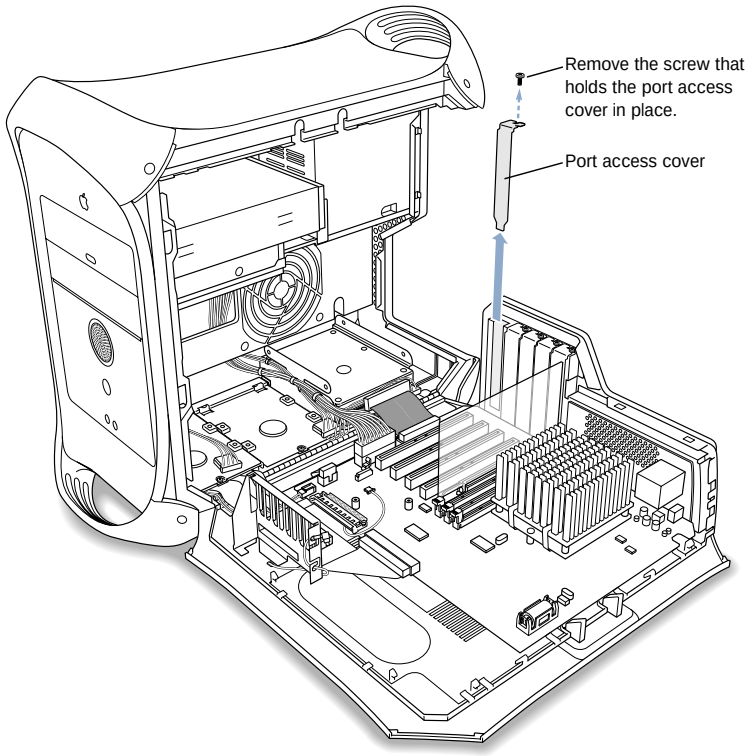
Maximum power consumption for all five expansion slots (the four PCI expansion cards and the AGP card) should not exceed 55 watts (W).

Installing Your Card

Install an AGP card in slot 1 only. Install PCI expansion cards in the slots labeled PCI 2, 3, 4, and 5.

1 Remove the screw that holds the port access cover in place, pull out the access cover, and set it aside.

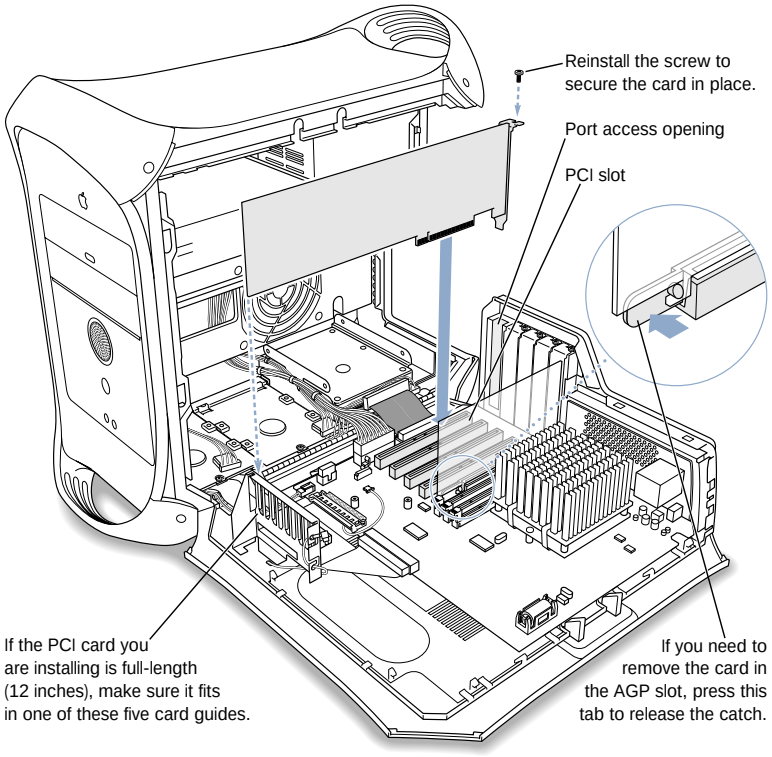
- To remove a card that's installed in the computer, remove the screw that holds the card in place and pull the card from the slot.



2 Remove the card that you want to install from its static-proof bag and hold it by its corners, taking care not to touch the gold connector or any of the components on the card.

3 Align the card's connector with the expansion slot and press down until the connector is inserted all the way into the slot.

If you're installing a 12-inch card, make sure the card engages the appropriate guide at the front of the computer.


Reinstall the screw to secure the card in place.
Port access opening
PCI slot
If the PCI card you are installing is full-length (12 inches), make sure it fits in one of these five card guides.
If you need to remove the card in the AGP slot, press this tab to release the catch.

Press the card gently but firmly until the connector is fully inserted.

- Don't rock the card from side to side; instead, press the card straight into the slot.
- Don't force the card. If you meet a lot of resistance, pull the card out. Check the connector and the slot for damage or obstructions, then try inserting the card again.
- Pull the card gently to see if it is properly connected. If it resists and stays in place, and if its gold connectors are barely visible, the card is connected.

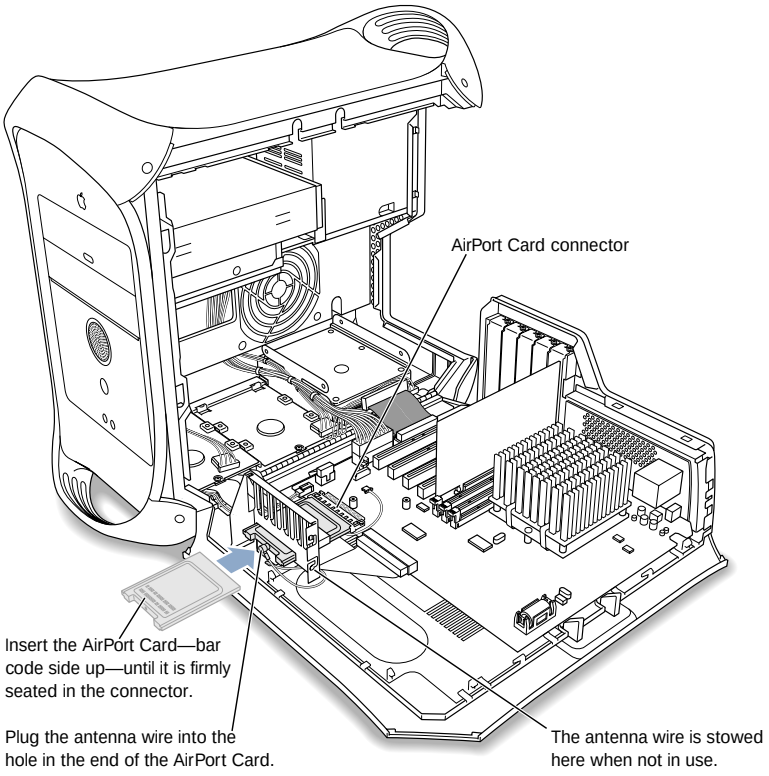
4 Reinsert the port access cover screw and tighten it to hold the card in place.

> **Warning** If you removed a card from your computer and did not install a replacement, be sure to place a port access cover over the empty slot. Do not leave an empty slot without a cover. An uncovered slot can affect the air flow that cools the computer's internal components and cause damage.

5 Close the computer.

Installing an AirPort Card

1 Position the AirPort Card with the AirPort ID numbers and bar code facing up and insert the card into the AirPort Card connector.


AirPort Card connector
Insert the AirPort Card—bar code side up—until it is firmly seated in the connector.
Plug the antenna wire into the hole in the end of the AirPort Card.
The antenna wire is stowed here when not in use.

2 Carefully attach the coaxial antenna wire to the port on the end of the AirPort Card.

The antenna wire is stowed on the side of the PCI card guide. Don't bend or crimp the wire tightly.

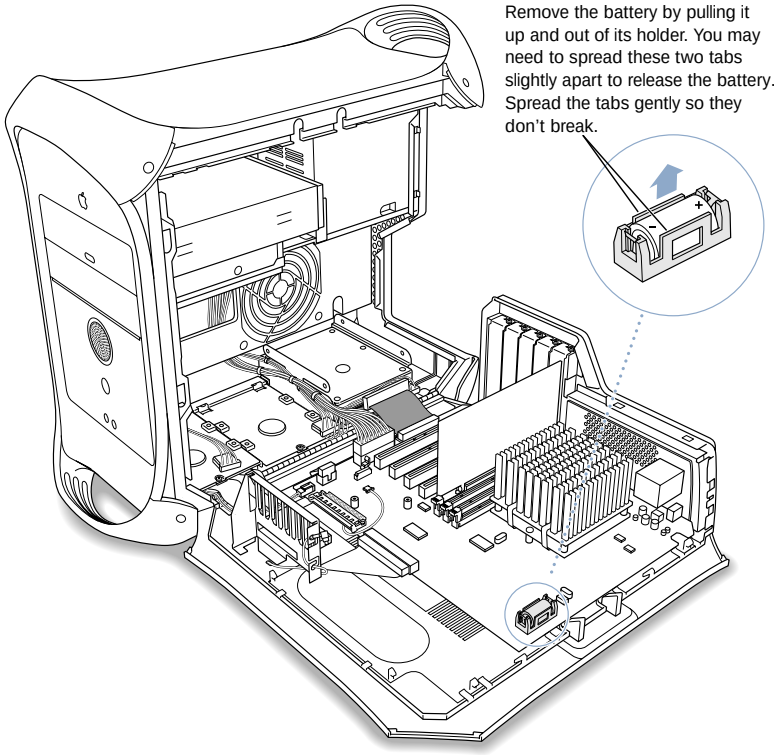
3 Close the computer.

Replacing the Battery

Your computer has a 3.6 V lithium battery installed on the main logic board. Some signs that you need to replace the battery are intermittent problems starting up the computer and random changes in its date and time settings. You can purchase a replacement battery from an Apple-authorized dealer.

1 Remove the battery from its holder, noting the orientation of the battery's positive end. (A plus sign is marked on and near the battery holder.)

Important Batteries contain chemicals, some of which may be harmful to the environment. Please dispose of used batteries according to your local environmental laws and guidelines.


Remove the battery by pulling it up and out of its holder. You may need to spread these two tabs slightly apart to release the battery. Spread the tabs gently so they don't break.
+
-

2 Insert the new battery in the holder, making sure the battery's positive symbol aligns with the positive symbol on or near the holder.

> **Warning** Installing the battery incorrectly may cause an explosion. Be sure the battery's positive and negative poles are correctly oriented in the holder. Use only the same type of battery or an equivalent recommended by the manufacturer of the original.

3 Close the computer.

CHAPTER 5

Troubleshooting

If you have a problem while working with your computer, here are some things you can try right away.

If the computer won't respond or the pointer won't move:

First, make sure the mouse and keyboard are connected.

- Unplug and then plug in the connectors and make sure they are firmly seated.

Then try to cancel what the computer is doing.

- Press the Command (⌘) and Q keys at the same time to try quitting the current application.
- Press the Command (⌘) and period keys at the same time and, if a dialog box appears, click Cancel.
- If that doesn't work, hold down the Option and Command (⌘) keys and then press the Esc key. If a dialog box appears, click Force Quit. Restart the computer by choosing Restart from the Special menu in the Finder to be sure the problem is entirely cleared up.
- Press the reset button on the front of the computer. (The button is marked with the ◁ icon.)
- If that doesn't work, hold down the power button on the front of the computer for 5 seconds. After the computer turns off, press the button again to turn it on.
- If all else fails, unplug the power cord to turn the computer off, then replug the power cord and use the front panel power button to restart the computer.
- *If the problem occurs only when you use a particular program,* check with the program's manufacturer to see if it is compatible with your computer.
- *If the problem occurs frequently,* choose Mac Help from the Help menu. Look at the section on how to prevent and solve problems. You may need to check for extension conflicts or reinstall your computer's system software.

If the computer freezes during startup or you see a continuous flashing question mark for more than a minute:

Turn off your system extensions.

- Start up your computer while holding down the Shift key.

If that does not work, start up using the system software CD.

- Insert your system software CD and start up while holding down the C key. (Make sure the Caps Lock key is not engaged.)
- After the computer starts up, see the troubleshooting information in the onscreen help. Choose Mac Help from the Help menu. Look at the section on how to prevent and solve problems. You may need to check for extension conflicts or reinstall your computer's system software.

If the computer won't turn on or start up:

First, make sure the power cord is connected to a working power source.

- The plug on the power cord must be completely inserted into the computer's power socket and firmly seated for your computer to operate correctly.

Reset the computer's parameter random-access memory (PRAM).

- Start up the computer and immediately hold down the Command (⌘), Option, P, and R keys until you hear the startup sound a second time. Then select your hard disk as the computer's startup disk using the Startup Disk control panel.

If that doesn't work, or if you hear tones during startup:

- If you recently installed additional memory, a PCI expansion card, or other internal component, make sure that it is correctly installed and that it is compatible with your computer. See if removing it allows the computer to start up.
- Contact an Apple-authorized service provider.

Software Problems

If you have a problem with a software program:

- For problems with software from a manufacturer other than Apple, contact the manufacturer.

If you have a problem using your computer or working with the Mac OS:

- Look at the Help Center (in the Help menu) for instructions and troubleshooting information.
- Go to the Apple Support Web site on the Internet for the latest troubleshooting information and software updates: www.apple.com/support

If you have trouble using AirPort wireless communication:

- Make sure you have properly configured the software.
- Make sure the computer or network you are trying to connect to is running and has a wireless access point.
- Make sure you are within antenna range of the other computer or the network's access point. Nearby electronic devices or metal structures can interfere with wireless communication and reduce this distance. Repositioning or rotating the computer may improve reception.
- See AirPort Help (in the Help Center) and the instructions that came with the wireless device for more information.

Problems With Your Display

> **Warning** If you have a problem with your Apple display and nothing presented in this manual solves it, contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the display yourself, any damage you may cause to the display will not be covered by the limited warranty on your display. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

No image appears on the screen.

- Make sure the display and computer are turned on.
- Make sure the cables are connected properly to your computer and the display.
- Make sure your computer is not in sleep. Press the power button or any key to see if the computer wakes.
- Make sure the display brightness and contrast are set properly. Some monitors have brightness and contrast controls on or under their front edge.

The screen image appears dim or flickers.

- Adjust the display brightness and contrast settings. Some monitors have brightness and contrast controls on or under their front edge. Depending on how dim your monitor appears, you may be able to adjust brightness or contrast using the Monitors control panel.
- Calibrate the monitor using the Calibrate option in the Monitors control panel.
- The flickering may be caused by interference from a nearby power line, a fluorescent light, or an electrical device—for example, a radio, a microwave oven, or another computer. Try relocating nearby electrical devices or moving your computer and display.

No colors appear on the screen or the colors don't look right.

- Make sure the display is connected firmly to the computer.
- You may want to calibrate your monitor using the Monitors control panel. For more information on color and your display, see Mac Help.
- Open the Monitors control panel and make sure your monitor is set to display colors. For more information on color and your display, see Mac Help.

After you change the screen resolution, desktop icons move.

- Changing the screen resolution affects the display of information on your screen. The operating system may automatically reposition icons after you change the screen resolution.

The screen freezes.

- If you are using both Energy Saver and a screen saver program, the screen saver program may be conflicting with Energy Saver. Turn off either the screen saver program or Energy Saver and restart your computer.

The light on the front of the monitor is flashing.

On some Apple flat panel displays, the power light can display a series of short flashes when an error has been detected.

- *If you see a repeating sequence of three short flashes,* the monitor is detecting input in the wrong video format. Check that your monitor is compatible with your graphics card and that you've installed the correct monitor software, if your monitor came with installation software.
- *If you see a sequence of two short flashes and a long flash,* the monitor is detecting a problem with a backlighting lamp. Contact an Apple-authorized dealer or service provider.

APPENDIX A

Specifications

Processor and Memory Specifications

Processor

- PowerPC™ G4 processor, 1 megabyte (MB) backside cache per processor (some configurations have dual processors)

Random-access memory (RAM)

- Minimum of 64 megabytes (MB) of Synchronous Dynamic Random-Access Memory (SDRAM), maximum of 1536 MB (1.5 GB)
- All SDRAM is supplied in removable Dual Inline Memory Modules (DIMMs).
- Three slots are available for DIMMs that are
  - "PC-133" SDRAM DIMMs
  - 32, 64, 128, 256, or 512 MB DIMMs
  - 256 MB DIMMs must have 128 or 256 megabit (Mbit) technology devices; 512 MB DIMMs must have 256 Mbit technology devices.
- 3.3 volt (V) unbuffered, 64-bit wide, 168-pin

The Mac OS system software provides information about your computer, including the amount of memory.

Dimensions and Operating Environment

Dimensions

- *Weight:* 13.6 kg, 30 lbs.

  Weight includes basic configuration, CD or DVD drive, and one hard disk drive. Weight may be greater if optional devices are installed.
- *Height:* 432 mm, 17.0 in.
- *Width:* 227 mm, 8.9 in.
- *Depth:* 468 mm, 18.4 in.

Operating environment

- *Operating temperature:* 10° to 35° C (50° to 95° F)
- *Storage temperature:* –40° to 47° C (–40° to 116.6° F)
- *Relative humidity:* 5 % to 95 % (noncondensing)
- *Altitude:* 0 to 3048 meters (0 to 10,000 feet)

CD-ROM and CD-RW Drive Specifications

- *Disc diameters supported:* 12 cm (4.7 in.)

Data formats

- CD-ROM
- CD-Audio
- CD-R
- CD-RW
- CDI
- CD Bridge
- CD Extended
- CD Mixed Mode
- Photo CD

DVD-R/CD-RW Drive Specifications

- *Disc diameters supported:* 12 cm (4.7 in.)

Data formats

- CD-ROM
- CD-Audio
- CD-R
- CD-RW
- CDI
- CD Bridge
- CD Extended
- CD Mixed Mode
- Photo CD
- DVD-Video
- DVD-ROM
- DVD-R

USB Specifications

- Two external Universal Serial Bus (USB) Type A ports
- Each port is on a separate 12 megabit per second (Mbps) USB channel.
- 500 milliamperes (mA) at 5 V are available per port for a total of 1 ampere.

FireWire Specifications

- *Data transfer speed:* 100, 200, and 400 Mbps

Power

- *Input voltage range:* 8 to 33 V
- *Input power range:* Approximately 1 watt (W)
- *Output voltage range:* Approximately 13 to 30 V
- *Output power range:* Up to 15 W

Ethernet Specifications

- IEEE 802.3 compliant
- *Maximum cable length:* 100 meters (m)
- *Protocols:* Open Transport, AppleShare, AppleTalk, NetWare for Macintosh, TCP/IP
- *Connector:* RJ-45 for 10Base-T, 100Base-TX, and 1000Base-T
- *Media, 10Base-T:* Category 3 or higher UTP on 2 pairs up to 100 m
- *Media, 100Base-TX:* Category 5 UTP on 2 pairs up to 100 m
- *Media, 1000Base-T:* Category 5 and 6 UTP on 4 pairs up to 100 m
- *Channel speeds:* IEEE Auto Negotiation of 10Base-T, 100Base-TX, and 1000Base-T

Modem Specifications

- *Data communications standard:* K56Flex and V.90
- *Speed:* 53 kilobits per second (Kbps)
- *Fax standard:* ITU V.17

Specifications for the AirPort Card (Optional)

- *Wireless data rate:* 11 Mbps maximum
- *Range:* Up to 150 feet (data rates may vary depending on environmental conditions)
- *Frequency band:* 2.4 to 2.5 gigahertz (GHz)
- *Radio output power:* 15 dBm (nominal)

Compatibility

- 802.11 Direct Sequence Spread Spectrum (DSSS) 1, 2 Mbps standard
- 802.11 HR DSSS 11 Mbps draft standard

Audio Output Specifications

- 16-bit stereo sound with audio sampling rates of 44.1 kilohertz (kHz)

Sound out using the Apple speaker mini-jack

- Compatible with only Apple Pro speakers; other speakers should not be used.

Sound out using the headphone jack

- *Full scale output level:* 3.0 V peak-to-peak with a 5 kilohm load

Noise, distortion, and bandwidth

- Output sound signal-to-noise ratio (SNR) less than 80 dB unweighted (typical)
- *Distortion:* Total harmonic distortion: 0.08 percent
- *Bandwidth:* 20 hertz (Hz) to 20 kilohertz (kHz)

Graphics Controller

- AGP card with Apple Display Connector and VGA connector

Video Display Modes

For technical specifications for your specific display, go to the Apple Web site and check the specifications for your product: www.apple.com/store

Power Supply

AC line input

- *Line voltage/current:* 100–120 volts (V) alternating current (AC), 8 amperes (A) and 200–240 V AC, 4.5 A, single phase, manually set by voltage selector switch or set automatically depending on the type of supply
- *Frequency:* 50–60 hertz (Hz)

DC monitor output

- 4.0 amperes (A) maximum at 28 V DC in the Apple Display Connector

Power Requirements for Devices You Can Connect

Expansion cards

- Maximum power consumption by the AGP card is 20 watts (W).
- Maximum power consumption by four cards and the AGP card combined is 55 W.

USB devices

- Each of the computer's built-in USB ports is allotted 500 milliamperes (mA).

FireWire devices

- The computer can provide up to 15 W total to the FireWire ports.

System Clock and Battery

- CMOS custom circuitry with long-life lithium battery. You can replace the computer's battery (see "Replacing the Battery" on page 71) with a new one purchased from an Apple-authorized dealer.

APPENDIX B

Safety, Maintenance, and Ergonomics

This appendix provides important information about safety procedures, routine maintenance, and ergonomic considerations for using your computer and display.

Important Safety Information

The only way to disconnect power completely from your computer is to unplug the power cord from the main power supply. Similarly, to disconnect your display completely, you must also unplug its power cable from the computer or other power outlet. Make sure at least one end of the device's power cord is within easy reach so that you can unplug the computer or display when necessary.

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug from your computer or display if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your computer or display are exposed to rain or any other excess moisture
- your computer or display have been dropped or the case has been otherwise damaged
- you suspect that your computer or display needs service or repair
- you want to clean the computer or display case or screen

To prevent accidents and damage to your computer or display, be sure that you always follow these instructions:

- Keep your computer and display away from sources of liquids and moisture.
- Don't set anything on top of the computer or display.
- Keep the computer and display vents free from obstruction.
- Never remove the case from the monitor, or open your computer when it's running. You could come in contact with hazardous voltage.
- During lightning storms, disconnect your modem from the phone jack to prevent a destructive voltage overload from damaging the modem.

Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third grounding pin. This is a safety feature. Don't modify the plug to fit into an ungrounded outlet. Contact a licensed electrician to replace the outlet with a properly grounded one. Do not defeat the purpose of the grounding plug!

Be careful when lifting or moving your computer or monitor. Be sure to use correct lifting procedures, lifting with your legs. When carrying the monitor, make sure the monitor is facing you. Don't carry the monitor by its stand.

Electrical equipment may be hazardous if misused. Operation of this product by children must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle electrical cables.

General Maintenance

If you need to clean the computer or display beyond wiping them down with a clean cloth, follow these instructions:

1. Turn your computer and display off.
2. Disconnect the computer power cable from the electrical outlet or power strip. If your display has a power cable connected to an outlet, disconnect it as well.
3. Disconnect the display's cables from the computer.
4. Clean the display screen with soft, lint-free paper or cloth dampened with mild soap and water.

> **Warning** Do not spray liquid directly onto the display screen. Liquid could drip inside the display and cause electrical shock.

5. Wipe the computer or display case surfaces lightly with a clean, soft cloth dampened with water.

   Don't use alcohol, aerosol sprays, solvents, or abrasives that might damage the finish on the case.

Protecting Your CD or DVD Drive

To keep your CD or DVD drive working properly:

- Position your computer so that the drive tray doesn't bump into anything when it opens.
- Close the drive when you're not using it.
- Do not put anything on the drive tray when it is open.
- Do not touch the lens with your fingers. Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple-authorized service provider for a lens cleaner.
- Keep your computer away from any source of moisture.

Maintaining Your Display

To maintain your display and ensure its long life:

- Do not press on the surface of the display screen.
- Do not write on the screen or touch the screen with a sharp object.
- If you will not be using your display and computer for a day or more, turn off the computer and display or use Energy Saver.
- Turn off your monitor, turn down the brightness, or use a screen-saver program that dims or varies the image on the screen when the computer is idle for a prolonged time.

Important Ergonomic and Health-Related Information

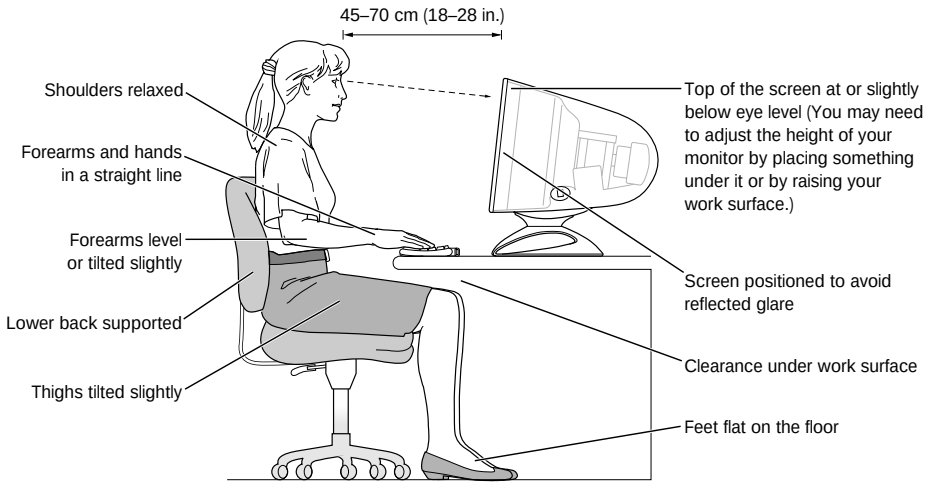
Here are some guidelines for adjusting the furniture in your office to reduce glare and to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are tilted slightly and your feet are flat on the floor.

  The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

  You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.
- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).

- Position the monitor to minimize glare and reflections on the screen from overhead lights and nearby windows. If possible, use a tiltable monitor stand. The stand lets you set the monitor at the best angle for viewing, helping to reduce or eliminate glare from lighting sources you can't move.


45–70 cm (18–28 in.)
Shoulders relaxed
Forearms and hands in a straight line
Forearms level or tilted slightly
Lower back supported
Thighs tilted slightly
Top of the screen at or slightly below eye level (You may need to adjust the height of your monitor by placing something under it or by raising your work surface.)
Screen positioned to avoid reflected glare
Clearance under work surface
Feet flat on the floor

For more information about health, safety, and maintenance, go to Apple's World Wide Web site: www.apple.com/about/ergonomics

Communications, Telephone, and Modem Regulation Information

For information on FCC regulations, radio and television interference, and telephone and modem information as it relates to this product, see the files in the Communications Regulations folder, inside the Documents folder on your hard disk.

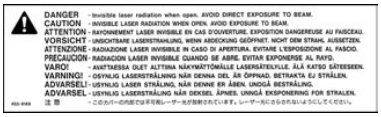
Laser Information

Warning Making adjustments or performing procedures other than those specified in your equipment's manual may result in hazardous radiation exposure.

Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM, DVD-ROM, or DVD-RAM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.

Class 1 label



Service warning label

Laser Specifications

Laser on pickup unit (when reading a CD)

- *Type:* Semiconductor GaAlAs laser
- *Wavelength:* 790 nm
- *Power out of objective lens:* 3.3mW
- *Beam divergence:* horizontal 12º vertical 35º

Mouse and Keyboard Information

The Apple optical mouse is a Class 1 LED product. This product complies with the requirements of European Directives 72/23/EEC and 89/336/EEC.

It also complies with the Canadian ICES-003 Class B Specification.

High-Risk Activities Warning

This computer system is not intended for use in the operation of nuclear facilities, aircraft navigation or communications systems, or air traffic control machines, or for any other uses where the failure of the computer system could lead to death, personal injury or severe environmental damage.

ENERGY STAR® Compliance

As an ENERGY STAR® partner, Apple has determined that this product meets the ENERGY STAR® guidelines for energy efficiency. The ENERGY STAR® program is a partnership with office product equipment manufacturers to promote energy-efficiency. Reducing energy consumption of office products saves money and reduces pollution by eliminating wasted energy.